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Virginia Wildlife

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COVER: The red fox is a controversial character in Virginia. Valued highly by fox hunters—fox hunting is an important "industry" in northern Virginia—he is ignored by deer hunters, is suspected of villainous deeds by bird hunters, and is a target of rabies-control trappers. He can be pursued year 'round with dogs, and from October 1 to January 31 with gun in many counties. Our artist: J. W. Taylor of Annapolis, Md.

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EDITORIAL

Pesticide Pros and Cons -- Part 1

THE fat is the fire now. Biologist-author Rachel Carson, author of *The Sea Around Us*, tossed it there with her recent three-part preview in "The New Yorker" of her new book, *Silent Spring*, an indictment of current chemical poisoning programs. President Kennedy added fuel with his August 7 request for new legislative safeguards to protect the public from dangerous drugs, an outgrowth of public concern over the baby-deforming effects of the sedative thalidomide.

Hopes of conservationsts for a national pesticide program generally less destructive of fish and wildlife are buoyed up by the widespread awakening of the public at large to the chemicals-in-the-environment problem which the *Silent Spring* and thalidomide scares have provided.

In this and two succeeding editorials an attempt will be made to describe the status of the agricultural chemical industry, the history of pesticide-wildlife problems, the laws and voluntary efforts which now affect the application of pesticides, current knowledge of the effects of pesticides on fish and wildlife, progress being made toward the development of means of pest control which are non-toxic to fish and wildlife, and a plan of action for conservationists to adopt to encourage the adoption of safe methods of pest control.

First, however, let us set the stage with a review of Miss Carson's book. A reading of *Silent Spring* is guaranteed to result in an uncontrollable nausea, a black fear of foodstuffs with chemicals on them, and a morbid curiosity about the "parts per million" of DDT in one's "body fat."

Dramatic examples of pesticide application "goofs" are set up and bowled over again and again from every possible direction, and the hidden, long-term dangers associated with widespread use of current broad-spectrum, long-life pesticides are listed: Some may cause cancer; some may cause the same kind of genetic mutations we fear from atomic radiation; our ground water as well as our surface water supplies can become poisoned; eradication of "bad" forms of life from the soil may also result in the extermination of the "good" organisms which break down organic matter; soils may become permanently poisoned; and our chemical attack is weakening the defenses inherent in the environment itself (natural insect predators, parasites, diseases).

Entomologists, stung by Miss Carson's attack in *Silent Spring*, are threatening to publish a rebuttal entitled *Hungry Fall*. Their main complaint is that they have not been given credit for positive accomplishments in the fields of food production, disease prevention and even fish and game management.

The world must eat, and diseases and insects compete with man for his food supply. George Ordish, of the Imperial Chemical Industries Ltd., Great Britian, states the case for the use of pesticide chemicals in food production this way:

"With the world population increasing at a rapid rate it is necessary to ensure that our output of food increases at least at the same rate, and preferably at a faster rate because large areas of the world are inadequately fed. One of the restrictions on food production is the enormous loss caused by pests and diseases. There are various methods of overcoming this loss. They may be divided into mechanical methods, biological methods and chemical methods. By chemical methods is meant the use of pesticides such as the fungicides, insecticides and weedkillers. As things are today it is usually these methods which give the biggest cash returns."

There were 7,851 commercial preparations of present-day poisons for controlling pests listed in the 1960 Pesticide Handbook—810 more than in the 1959 edition. United States production of active pesticide ingredients has increased from 215 million pounds in 1935 to well over a billion pounds annually.

In addition to protecting our food supply, chemical poisons are also used to protect forests from insect damage.

The public health significance of the control of disease-transmitting insects and rodents by chemical pesticides cannot be overlooked. Mosquitos, flies, fleas, roaches, bed bugs, ticks, chiggers, lice and rodents are all susceptible to various chemical toxicants.

Dr. Clarence Cottam, a well known authority in the area of pesticide-wildlife relationships, sums it up like this: "Chemicals useful in controlling pests of man belong in the category of mixed blessings. Like the automobile, airplane, or atomic power, they clearly manifest potentialities for great good as well as harm, depending upon our skill and wisdom in using them."—M.R.C.

Adapted from September 1, 1962, CONSERVATION NEWS, published by the National Wildlife Federation, Washington, D. C.

LETTERS

Enjoyed "Fishing For Fun"

BILLY TOLBERT and I spent a weekend in June on the Rapidan and Staunton rivers. We fished 8½ hours Saturday and 3½ hours Sunday and covered the Rapidan from the first bridge to the President's cabin and the Staunton from the ford to the first sawmill site. We fished dry flies entirely using hairwing coachmen and a small yellow May fly. We took between 110 and 120 trout, mainly native brook. We took a few rainbow in the stocked area with the largest one being 18 inches.

Both Billy and I say that this is the finest public fishing in the state that we know anything about, and it is our hope that not only this "fish for fun" area will be continued but that the commission can find a way to establish others. And, of course, we would like to see one in this vicinity.

The commission has a man, Mr. Utz, who patrols this area. We first saw Mr. Utz early Saturday morning and talked with him on four occasions. He was very helpful and the information he gave us was 100 percent accurate. He has a most cooperative attitude and certainly lent an added pleasure to our trip.

J. Lewis Thurman
Roanoke, Virginia

How To Identify Lady Grouse

IS there any species of pheasant in which it is impossible to distinguish the female from the male? What about the native pheasant or "mountain grouse"? Some local "experts" claim that there are no distinguishing marks, even after they are killed and dressed. They are vehement and dead sure they are right. I would appreciate your opinion on this vital question.

Eugene J. Cox
Galax, Virginia

(Your friends are nearly right in saying that it is impossible to tell the sex of the ruffed grouse or "native pheasant." Distinguishing males from females in the hand is difficult but not impossible. The tail of an adult cock is usually about an inch longer than that of an adult hen. The color band at the end of a cock's tail is unbroken across the entire width, but the band on the tail of the hen is generally broken in the two center feathers —especially on the underside. Otherwise, markings of the two sexes are almost identical. Of course, sex can be determined on any bird or animal by examination of the internal organs. Sex is easily determined in the true pheasants such as the ring-necked pheasant, Iranian pheasant, green pheasant, and others being experimentally stocked in Virginia by the Game Commission. The males are much more brightly colored than the females.—Ed.)

Off On The Right Foot

WE think this book wonderful! Have two boys and hope they might do wildlife work when grown. You don't hear of women in this field, but if I were starting a career I'd look to this.

Mrs. E. R. Cooper
Stuarts Draft, Virginia

Courtesy *The Arizona Republic*

It's that time of year again when our "bird" pests take to the field. Herewith, two artists' conceptions of these "ugly ducklings."

"Bird" Pests of Woodland, Farm, and Stream

AUDUBON never painted them. Cooper couldn't find them. And Roger Tory Peterson never classified them. So we enter the decade of outdoor recreation with a large gap in man's knowledge of birds.

Don't blame Audubon, Cooper and Peterson. The kind of birds we're talking about are recent arrivals on the American scene. Serious outdoor birdwatchers are becoming alarmed about their increasing numbers.

The birds in question are all related to the lark family. These are the migratory woodland creatures that make increasing use of forests, lakes and streams while out on a lark.

MIGRATORY LITTERBIRD

Fortunately, most of these outdoor fun-loving birds are harmless. All of them are out to forget about tensions, traffic and taxes. But among them are some birdbrained recreation seekers who prove that they can discard the civilities of city life as fast as its worries.

These flighty visitors include many annoying birds, some comic, some foolish and some dangerous.

Birdwatchers agree that the most common of the woodland pest is the *migratory litterbird*. Its range encompasses parks, campgrounds, highways and wilderness areas. Spoor of this species is evident the year around.

Foresters, rangers and highway naturalists seldom are able to identify the home nesting ground of the litterbird. But there is ample reason to believe that it must prefer to live in pig pens, barns or garbage dumps.

LARGE-FOOTED FENCE HAWK

Increasing pressures on tree farmers and private landowners to open their timberlands for recreation provide those owners an opportunity to fill a real public need. That opportunity also raises problems, which are treated in a humorous manner here by Kramer A. Adams, public relations administrator for the Weyerhaeuser Company.

"Bird" illustrations courtesy *Wildlife in North Carolina*.

When fall comes to our fields, a plaintive twang humming through the brisk, clear air unmistakably identifies the presence of a *large-footed fence hawk*. The bird is nearly immune to the dangers of barbed wire, but takes no chances. In a characteristic gesture, he firmly plants one foot on the lower strand of fence wire, pulls upward on the middle one, and scrunches through.

The fence never will be the same, nor will the farmer's attitude toward hunters. The fence hawk's flight pattern often is traceable by a string of "No Hunting" signs.

One of the most serious troublemakers is the *free-wheeling road runner*. It often makes a temporary nest in the mud of closed logging roads. The cry is readily identifiable. It goes something like, "That blank-ety-blank lumber company —why didn't they tell me that this road was soft!" Meanwhile, he has used the timber company's road warning signs to put under his tires for traction.

RED-EYED SWALLOWER

One of the easily identified woods creatures is the *red-eyed swallower*. He usually has deservedly short life, and often is ostracized by better-behaved birds. His cry, of course, is "Hic!" His resting place on the ground is recognized by a collection of beer cans or whiskey bottles.

It's those bottles, by the way, when catching the sun's rays, that sometimes start fires just as efficiently as a magnifying glass.

ADDLEPATED SNIPE FLICKER

This brings us to the one bird that should be shot on sight. That's the *addlepated snipe flicker*. Fires are still the greatest threat to our forests and rangelands, and, resultantly, to our outdoor opportunities. Paychecks and businesses are dependent on fire-free lands, to say nothing of scenery, wildlife and pure water. The cigaret snipe-flicker and his buddy, the *bonfire buzzard*, must be exterminated.

America's fastest-growing bird pest is the *rooster-tailed water thrasher*. Its range is on any body of water large enough to hold an outboard boat, and many that are not. This species of water thrasher has an unpredictable flight course, although it is marked by rooster-tail spray, waves and violent reactions from lesser craft. The habits of this bird can be modified by use of a thumbs-down gesture.

ROOSTER-TAILED WATER THRASHER

Have you heard about the *sneaky-eyed woodpecker*? He doesn't get away with much vegetation; he just pecks away at it. He's the overenthusiastic home gardener, the illegal Christmas tree cutter, and the campfire kindling wood gatherer.

SNEAKY-EYED WOODPECKER

His brother, genealogically speaking, is the *large-pocketed camp robber*. In making his nest, he'll steal anything. In recent years this bird has been known to fly off with power saws, picnic tables, gasoline, axes, tractors, etc.

Perhaps the most intolerant of the fowl we have to put up with is the *red-hatted loon*. Fortunately, this rare species is seasonal and does damage only during a five-or-six week period in the fall. Biologists have determined that the loon has to have meat in order to survive. One of its more noticeable habits is that of shooting first and looking afterwards.

LARGEMOUTH GROUSE

This list of undesirable species is not complete. Nor does it include the many crossbreeds and mutations that will be afield during the camping and hunting season this fall. Be alert to them, also.

ELK IN VIRGINIA

Photo by Leonard Lee Rue III

Virginia's original elk population was completely eliminated before the turn of the century. Yellowstone National Park was the source of Virginia's present elk herd.

By GEORGE McKENNA
Richmond, Virginia

THE ELK in Virginia today can be traced back to 1917, when 150 were bought from the Yellowstone National Park by what was then the Virginia Department of Game and Inland Fisheries, in cooperation with several sportsmen who put up part of the funds. The animals acquired in this purchase were divided into small herds and released in widely scattered parts of the state, from Princess Anne County to the mountains. Some of the elk released in the mountains were able to adapt themselves to their surroundings and reproduce in the wild, with the result that as early as 1920 the Old Dominion had an elk season in its game laws.

This season ran from December 15 through 31, with no hunting of any kind allowed on Sundays. There is no record of the number of elk taken during 1920, but all game kill records dating from that time are incomplete. There was no provision for checking the kills, and the only reports are estimates made by members of the game warden force that had been established three years earlier, and by "prominent hunters" who had their names listed in the records for sending in estimates of the game killed in their counties.

That elk did exist in Virginia at that time is obvious from a recommendation made to the Governor by Commissioner F. Nash Bilisoly of the Game Department on June 30, 1921. The law then set a maximum fine of $100 for killing an elk out of season, but no minimum, and Commissioner Bilisoly argued that, "To prevent profit the law ought to prescribe a minimum penalty equal to the value of the hide and carcass." Then he went on, "There are persons who are not adverse to killing elk out of season when sympathetic magistrates impose a fine of not more than $1 when the carcass of the elk may be worth $25 or more."

Illegal hunting of all kinds was a major problem of the newly established Game Department during the 1920's, but it did not prevent the elk herds from becoming established. An estimate made in 1922 set the total number for the State at 500. Of this, Bland County was credited with 50, Botetourt with 70, Craig with 50, Giles with 70, Roanoke with 50, Russell with 70, Washington with 50, and Warren with 30. The rest were divided among Montgomery, Pulaski, Princess Anne, and other counties that were not named.

At the time this estimate was made it was unlawful to kill elk on national forest land, to track them in the snow, to kill them in water, or to hunt them with anything except a rifle of at least .25-20 caliber.

The open season remained the last half of December during the 1920's. The records list two killed in Giles County in 1923, and four in that county in 1924. Other legal kills could be made without being listed in the records, however, through a law which specifically gave permission to landowners to kill, at any time, on their own property, elk found damaging or destroying either crops or property.

The open season was changed in 1930, to the first three days of December, and hunting was allowed only in Bland, Craig, Giles, Montgomery, and Pulaski counties, with the use of dogs prohibited. The cost of an elk license that year was 50 cents for residents of Virginia, and $2.50 for nonresidents.

The season was changed again after 1930, to three days during the middle of November, and hunting was limited to bulls only, in Botetourt, Bland, and Giles counties. Because of the strong public interest in elk hunting at that time, in 1935 the Commission of Game and Inland Fisheries, which had succeeded the Department of the same name, bought an express carload of 56 elk, including both bulls and cows, from Yellowstone National Park. Five animals died on their way to Virginia, and 45 were released in the Sugar Hollow section of Giles County and 6 on Natural Bridge National Forest land in Botetourt County.

In that same year a study of the elk herds in the State was made by the Cooperative Wildlife Research Unit at V.P.I., and in 1938 and 1939 a second study that lasted 18 months was made by a graduate student of that school.

Three bulls were reported killed in Botetourt County in 1937, and from that year until recently Botetourt and Giles have reported legal kills, with most of the kills being made in Giles. An annual take of seven or eight bulls was fairly common through the latter part of the 1930's and the first part of the 1940's, but during this period the herd in Giles County built up to the point where it caused considerable damage to farm crops on land around the perimeter of its range.

In 1942 this crop damage was so great that special big game stamps sold that year to reimburse the farmers brought in only enough to pay 34 percent of the claims. To cut the herd down, the 1943 season was lengthened to four days during the middle of November. Bulls were still the only legal game in Botetourt County, but both bulls and cows were made legal game in Bland and Giles. The kill that year was 26 bulls and 20 cows, all taken in Giles County. Twenty elk were taken there the first day of the season.

Three day open seasons for bulls only were held in the same counties in 1944 and 1945, but after that the season was closed for 10 years. It was reopened in Bedford County for a week in 1956. Only bulls were legal game, and no kills were reported.

In 1958 the season was reopened for two days in the middle of November in Bedford, Bland, Botetourt, and Giles Counties. Only bulls were legal game and 12 were taken, all in Giles County. The 1959 season was increased to three days, in the same four counties, and 5 kills were made. The three day season was repeated in 1960, in the same counties and with bulls still the only legal game, and three were taken. All of these recent kills were made in Giles County.

Although the herd in Bland and Giles Counties has furnished all of the kills made in recent years, a second herd ranges over the Peaks of Otter in the Blue Ridge Mountains, in Bedford and Botetourt counties. This herd is small, numbering perhaps 40 animals at most. The crest of the mountain is national park land where hunting is not allowed. The elk move up to the safety of the park in the fall, although at other times of the year they range far down the mountain slopes. A few are seen occasionally by fishermen or hikers, and at times they cause some damage to crops on farms at the base of the mountain.

The herd that has provided all of the recent hunting ranges over Flat Top and Pearis Mountains, in the northern part of Bland County and the southern half of Giles. It may number as many as 125 animals, and occupies a range of about 40,000 acres.

This area is not good elk range. Studies have shown that on the much better ranges in the western states 60 percent of the elks' diet is made up of grasses. In the Bland-Giles area only 26 percent of the diet is grass, and much of that is obtained from privately owned hay fields and pastures along the outer edges of the section in which the herd lives.

U. S. Forest Service Photo

The Dismal-No Business Creek area on the Jefferson National Forest is one of the few places in the East where there has been a huntable elk population in recent years. Bob Bruce of Bastion, Virginia, shows off his 600-lb. trophy, killed in 1958.

The heart of this range is a rugged stretch of wilderness country. The mountains, which are part of the Allegheny chain, form a watershed that is drained to the north by Mill Creek, and to the southwest by No Business and Dismal creeks. The highest elevation is about 3,000 feet, and the mountain slopes are rough, cut by numerous deep hollows.

When elk were first released here in 1917 the entire region was privately owned, most of it in huge blocks of hardwood timberland. Cutting this timber continued until well into the 1930's, with little regard for good logging practices. The forests were clear cut and slash was piled deep on the steep slopes, with the result that in 1938 a severe fire raged through the area and completely wiped out the vegetation on several thousand acres.

Between 1940 and 1945, about 23,000 acres were bought by the U. S. Forest Service for inclusion in the Jefferson National Forest. The Dismal-No Business Wildlife Management Unit was established on this National Forest land in 1948, under the terms of the cooperative agreement between the Forest Service and the Commission of Game and Inland Fisheries through which the agencies work together to increase wildlife on national forest lands in the State.

At the time the wildlife management unit was established a large part of the area was a sea of brush. This is now a thick growth of young hardwoods, in which some conifers are mixed. It offers little in the way of food for elk, and the wildlife clearings that are the result of work by game managers on the wildlife management unit, plus the grasses seeded on old saw mill sites and abandoned logging roads, have been of major importance in maintaining the herd.

But even though this is not good elk range, the animals that live on it are not stunted. Some of the bulls taken during recent open seasons weighed over 900 pounds, and handsome racks of 12 or more points have been reported. Because of their size, hunters who took them used at least a .30-06 or .308 rifle loaded with 200 grain or heavier bullets to assure clean kills. Because the heavy cover in this area makes the long shots of the western ranges rare, the best sight combination was found to be a simple post front sight and a good receiver sight with the aperture disc removed.

Guides sufficiently well acquainted with the area to bring hunters into a spot where they had a chance of taking a bull were hard to find. It was found that the best way to hunt this section is for a party of two or three hunters to go into it a few days before the season begins and scout it carefully themselves for elk signs. Elk hunting is allowed on national forest land when the season is open.

Even with the best of preparations, the chances of taking a bull here can't be considered good. But it is the only place east of the Mississippi River where the hunter has any chance at all. Several other eastern states experimented with restocking elk about the same time Virginia did. A few may still be found in Michigan, New Hampshire, and Pennsylvania as a result of those experiments. But there has been no elk hunting in any of those states for a good many years, and no prospects that there will be any in the future. The Old Dominion is the only state in the East where elk hunting has been possible in recent years, and where it may be possible again in the future.

Commission Photo by Kesteloo

No need to panic if you know which direction you should be heading —use the "shadow-tip method" of direction-finding.

FINDING MY WAY

By ROBERT OWENDOFF
Falls Church, Virginia

LET us suppose that, while on a hunting trip in northern Minnesota, you and the other party members (Tom, Dick and Harry) become separated from each other and find yourselves in unfamiliar surroundings. However, since each knows that the nearest habitation lies to the southwest, you proceed, each in his own fashion, to reach the closest settlement. We shall say it is August 1, shortly after noon.

Tom remembers his Navy training and uses the *watch* method (see U. S. Navy manual, "How To Survive On Land and Sea"). His watch is set correctly and is an excellent timekeeper. Using a twig and the sun's shadow, he obtains "north" and orients himself to travel southwest. He may get to where he is going, but his direction of travel will be about 30 degrees in error which won't make it any easier.

Dick, an Army man, decides to use the *equal hour* method he remembers from Army Field Manual No. 21-76, entitled "Survival." He, too, has a good watch set to correct time. If he follows the procedure exactly as prescribed, he will be in error in his direction anywhere from 15 degrees to an absurdly large error (maybe 50 degrees).

Harry, a former Boy Scout, recalls the Scout handbook method, using equal shadows. He drives a stake, draws a good circle, marks the ground as directed (it's a good thing it hasn't snowed, or that the ground isn't muddy) and waits for the shadow to hit the circle again. After awhile, it dawns on him that it doesn't, but, if he is patient for nearly 24 hours, it will finally reach the circle again sometime late the next morning.

Written in the spring of 1962 while the 17-year-old author was a senior at George Mason High School in Falls Church.

As a former airman, you received advanced training and learned, to your consternation, that the famous outdoorsman, Horace Kephart, failed to mention this significant fact in his book. Even though the Macmillan Company has published his authoritative guide, Camping and Woodcraft, for nearly 50 years, and in many, many printings, his methods for finding direction by the sun are not of the same caliber as the rest of his truly wonderful book for the woodsman.

At Air Force school you used Air Force Manual No. 64-3, entitled "Survival," describing the *shortest shadow* method, which does not require the circle (and two readings) as in the Boy Scout handbook and in Kephart's book. You enthusiastically drive a stake into the ground and wait for the shadow to shorten. Unfortunately, it doesn't; as a matter of fact it gets longer, and then you wistfully remember that it will not get shorter until next morning . . . and not shortest until nearly 24 hours have passed.

Now, your dog is no ordinary dog. As a matter of fact, he was a very smart pup in his younger days. He went to school and was quite bright in mathematics (as well as in astronomy and navigation. Had he been with Tom, he could have told him that the *watch* method requires several corrections. So, the dog corrects for equation of time, difference in longitude between Minnesota and the time zone meridian for central time (90 degrees W. longitude), and even remembers to substract one hour to compensate for daylight saving time. He knows that he now can use the *watch* method with an accuracy of about 15 degres or so, *if* he had a watch.

But we said he was a *real* smart dog. He racks his brain for the other methods described in books on practical astronomy, surveying, and navigation. Plenty of good methods occur to him, but he forgot to bring his engineer's transit (or his sextant) and seems to have misplaced his charts, tables, nautical almanac, protractor, and list of math formulas (are they whoppers!). However, he continues to think, and we shall leave him here with his mental equations, celestial sphere relationships, and the like. Maybe he will devise his own trigonometry tables plus the formulas for spherical geometry!

Now, if a dog can think, so can you. Gradually a jingle starts to run through your mind—*two dots and a line, and you're headed just fine*. Then it hits you—the *shadow-tip* method, of course!

The Shadow-Tip Method

Let's see; drive a stick vertically into the ground. Mark the shadow-tip at once (twig, finger, hole in the snow, etc.), then once again after it has moved a bit. A line drawn through these two points is your east-west line. If you can't even orient yourself to which is east, merely draw the shortest straight line from the stick to this E-W line, to obtain north.

Now you can start at once (only 15 minutes for a good reading).

Worried about circling? You should be, because most people do tend to travel in a circle. However, no need to travel only a few miles a day, taking *one* reading only per day. You can take as many readings as you need, and your error will only be between 3 and 7 degrees, depending on the time of day. (If you travel in both morning and afternoon, even this error will cancel out.)

About The Author

Seventeen-year old Robert S. Owendoff of 153 Gundry Drive, Falls Church, Virginia, graduated from George Mason High School in Falls Church in June 1962. Robert was active in S.C.A., band and the tennis team and is a life scout.

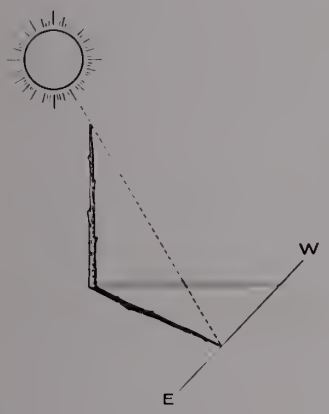
Robert's direction-finding process is simple, but an extensive search in the files of the Library of Congress, the U.S. Naval Observatory and other special collections in the field of astronomical measurement have failed to turn up any prior mention of the shadow-tip method. As for its accuracy, Robert had his calculations verified by over 10,000.00 computations on an IBM electronic computer.

Robert S. Owendoff

He originally discovered his method of direction-finding when studying sundials for a science project. In 1960 he won first prize in several science fairs, culminating in his being awarded first place at the Virginia Junior Academy of Science statewide science fair.

Because this new direction-finding system is a major improvement over established methods, the Defense Department, Civil Defense officials and the Red Cross are interested. The Army formally adopted Robert's method on January 26, 1962, and in May awarded him $500 for his suggestion.

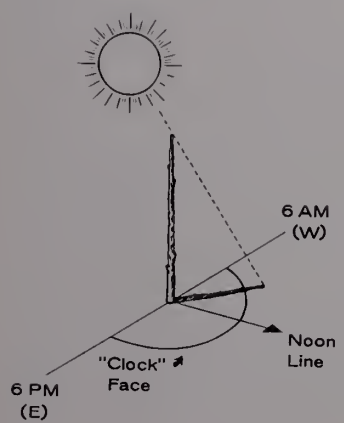
Robert planned to attend the University of Virginia this fall.



SHADOW-TIP METHOD
TO FIND DIRECTION:

Mark the TIP of the shadow cast from an at least 3-foot stick, (which may be inclined to obtain a more convenient shadow length). Mark TIP again after about 10 minutes.

A straight line thru the 2 marks is an EAST-WEST line, from which any desired direction of travel may be obtained.



SHADOW-TIP METHOD
TO FIND TIME OF DAY:

Proceed as for Direction, then draw a NOON line at right angles to EAST-WEST line at any point. Move stick to where these lines intersect, and set it vertical. The shadow is now an hour hand on your 24-hour "shadow clock." 6 a.m. is WEST and 6 p.m. is EAST.

In example shown, time is about 9:30 a.m.

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For the perfectionist, a variation in this method, using one additional line, will give a very exact north reading. Also, for military personnel in foreign lands, time can be obtained (escaped prisoners of war don't usually have watches) because time may be important for a variety of reasons too technical to describe here.

The story about the hunting party is just a yarn, of course, but it *could* and *does* happen, according to the newspapers. Who gets home first?

(Bob has published a 16-page pamphlet to help you decide the answer to this question. It may be obtained by writing to SHADOW-TIP METHOD, Box 571, Falls Church, Virginia.—Ed.)

"Less'ee . . . the sun rises in the west and sets in the east or is it the other. . . ."

Plant Odors

A lawn being mowed, hay curing in the sun, the faint elusive scent of freshly turned soil, the woodsy aroma of the out-of-doors after a summer shower, or the drifting smoke from burning autumn leaves—these make almost anyone want to stop, shut his eyes and inhale the fragrances that come on the breeze.

Smells are difficult to express in language. Compared with the wealth of words, symbols and other methods for recording sensations of sight, sound and touch, there are only a few which graphically describe odors.

Odors are detected by special sense cells in two patches, about the size of postage stamps, in the uppermost parts of the nasal chambers. Each sense cell is connected with the brain. With ordinary breathing, scents often go unnoticed. Once alerted, however, we sniff, the sensitive patches are ventilated, and odors seem much stronger. Volatile oils such as those of peppermint and flower essences give our most characteristic scents. Most other odoriferous substances are also soluble in oil. The human nose, although much less sensitive than a dog's, can detect unbelievably small quantities of such substances—often, in a single sniff, as little as one part in billions.

A few wild flowers have characteristic scents but the great majority are either lacking in distinctive odors or else our noses are too crude and untrained to distinguish differences. Wild roses have a delicate sweet fragrance. So do the opening flowers of wild crabapples. But the beautiful white blossoms of the hawthorn smell like canned sardines. The basswood, black locust, elderberry and buttonbush blooms have rich perfumes which attract multitudes of honeybees.

This Month Archers May Pursue Three Kinds of Game --

Tracking Your Deer

By FRANCIS W. KEMP

EACH year, thousands of sportsmen enjoy what some consider to be hunting's finest challenge—bowhunting. Both veteran and novice will pit their wits and skill with a bow and arrow against fleet-footed deer.

To accommodate the growing popularity of this sport, many state game laws have been liberalized. But hand in hand with liberalization goes responsibility. There is a responsibility of safety between bowhunters themselves. As in hunting with firearms, hunting with bow and arrows demands that everyone "be sure of the target."

Then there is the responsibility of humaneness to the quarry. The hunter's prayer that he either will kill clean or miss completely should be practiced by every bowhunter. Each man or woman who goes afield with a bow should know exactly what to expect when he or she hits or misses a deer. A successful bowhunter is usually a skilled stalker, marksman and tracker. The first two abilities are desirable: the last one is essential.

Most deer, when hit with an arrow, are going to run. Unless the bowhunter uses his head, the deer will fade away into the green forest and what might have been a fine trophy of the hunt will wind up as a rotting carcass. Here are a few simple suggestions which may save the archer a lot of regrets and grief.

First—Mark the spot from which you shot at the deer. This can easily be done by making a small blaze on a nearby tree or merely by sticking an arrow upright in the ground.

Next—Lay a stick or an arrow on the ground, pointing it at the last place you saw the deer.

Then—Mark the spot where the deer was standing.

Force yourself to sit down and wait for 15 or more minutes to give the arrow a chance to do its work. An arrow kills by causing bleeding, not by shock. It takes time for the blade to achieve maximum cutting power. Now get up and look for your arrow. Sometimes it will be found in a tree between you and the deer, and this can be chalked up as a miss. If you find it in a tree beyond the deer, examine it very closely. If it passed through the deer you will find a few hairs near the fletching or perhaps caught in front of the nock. Some arrow points will retain a little flesh and this is particularly true of the three-bladed type. If the arrow is clean, try to sight along it back to your original stand and visualize the deer in position. Perhaps you can see that you shot too high or too low but look for a blood trail anyway.

Commission Photo by Kesteloo

Several hundred deer are taken each season by Virginia archers.

Perhaps you can't find the arrow (a common occurrence). Now you must attempt to follow the trail for at least 100 yards, and if in doubt as to which way he ran, you can return to your shooting position and look at your pointer. Go to where you saw him last and search from there. This way you should be able to follow his approximate trail for at least 100 yards. Perhaps you can locate the depression left in the leaves under where he jumped. If a careful search along and to both sides of where you thought he ran for at least 300 yards doesn't produce sign, you no doubt missed him. If you locate patches of blood with foam in it, you have a lung shot and should find him dead on the trail. The spot at which you first find a blood trail should be plainly marked and also other places at 25-yard intervals along the trail. These markings will prove invaluable in the event you leave the trail for additional help.

If the blood sign consists of only a few drops here and there, don't give up. If the deer is bleeding internally, he will probably lie down within 300 yards and you should find him. If the blood trail becomes weaker and finally stops and you have followed it faithfully for 300 yards, try walking in large circles from the last spot you marked. If you haven't located the deer after getting about 200 yards from that point, it is entirely possible the wound was superficial and will not bother him any more than a thorn cut. At any rate, you have done your best.

Reprinted by permission from *Pennsylvania Game News*.

VIRGINIA ARCHERY SEASON—Deer of either sex, bear and squirrels may be taken with bow and arrow only (use of dogs prohibited) from October 15-November 1 in all counties with open deer seasons, the bag limit to correspond to the number allowed in that county during the general season.

A modern Robin Hood peers from his tree blind as he awaits the coming of a deer.

Photo by Jim Lee

A Bear With A Bow

By EMORY E. CLIFTON
Two Rivers Archery Club
Front Royal, Virginia

WHEN my nephew, Tom Clifton, of Roanoke, called and invited me to join a hunting party in Bath County last season, I went more to enjoy the camping trip and good hunting company than any expected hunting success. This was bow season so all firearms were left at home.

The party included my brother, Pierce Clifton; his son, Tom Clifton; and his son-in-law, Bob Terry. All live in the Roanoke area and are members of the Sherwood Archers. These three motored to Bath County on Saturday, October 14, and set up camp at the Blowing Springs campsite on Back Creek in the George Washington National Forest. I joined them on Monday after all the work was done.

We were all familiar with the area, having hunted there with rifles several seasons in the past. I had not been with the party for seven years and was very surprised at the improvements that had been made at our old campsite. In addition to a posted name, it now sported, among other improvements, a good access road, marked camp sites, running water, sanitary facilities, and outdoor fireplaces.

I was given a jolly welcome to camp; but when the conversation got around to deer hunting, I noted an atmosphere of, "hope for the best, expect the worst." My companions had scouted the area on Sunday and reported a noted absence of deer signs. On the strength of this report, it was decided that we would drive to the Gathright Wildlife Management Area on Monday afternoon. The total result of this trip was the spotting of hunting positions for Tuesday. Deer signs were light here also.

There is nothing more welcome after a day of outdoor tramping than fried potatoes, ham, and coffee prepared over the open fire. A good night's sleep and daybreak found us at our chosen positions. During the morning, I had a chance for a 25-yard shot at a small doe. I had just started a two-week vacation and decided to wait for something larger. Bob Terry saw deer without getting a shot. Pierce was entertained by a coonfaced whistle pig, and Tom left some squirrels arguing about which one got the closest shave. Net results, a lot of fun but no game.

Wednesday morning found Pierce and me penetrating deep into the forest looking for deer we had not found but knew should be there. After two miles of walking we decided to split up. Pierce would hunt the lower section. I headed for the mountain top.

It was 7:30 a.m., near the mountain top, that I first saw the bear. I had been gradually working my way up a deer trail when I saw the bear walk from behind some undergrowth about 50 yards up the trail. He was not aware of my presence. He was moving from my left to my right, and I thought at first that he would move on over the ridge. Instead, he circled the undergrowth, made a quick study of some fallen trees, and ended up headed straight for me down the trail.

At 30 yards I drew my bow, and the bear saw me. He stopped with head low, not unlike a pig. This would have been a perfect skull shot for a rifle, but I considered it anything but perfect for an arow. I hoped to drop the arrow just under his chin; but instead, I hit a small sapling to the left of his face. Without any loss of time, the bear made an about face and disappeared up the mountain. For the next two hours I mentally kicked myself for not waiting until the bear was closer.

Lewis E. Allen Photo

Emory E. Clifton of Front Royal with the bear he bagged with bow and arrow in the Gathright Wildlife Management Area in Bath County on October 18, 1961.

By 10:00 a.m. I had moved not over 100 yards down the trail. At the time, I was standing listening when I heard a heavy noise in the leaves just over the brow of the ridge. Being sure that a big buck was headed my way, I positioned myself and raised my bow. Over the hill, 40 yards away, walked a big black bear. Was it possible? A second chance? My experience that morning, followed by the mental reprimand, had conditioned me for this moment. From then on my only thought was to place an arrow where it would do the most good.

With bow already raised, I remained motionless; while with only slight deviation to avoid a few obstacles, the bear came straight toward me. At 25 yards, I slowly began to draw my bow; at 20 yards, with my bow fully drawn, he stepped behind some dead brush and stopped. I knew better than to try to shoot by the dead wood. He stood still and I stood still with bow fully drawn (50-pound draw). Some-

(Please turn to page 16)

Hunting For Squirrels

IF you're weary of life in a squirrel cage, try squirrel hunting. Properly done, it will soothe jangled nerves and restore faith in humanity. And with a little attention to the job at hand, you should come back with a pair or more of the most delectable little critters in the world.

Unlike many outdoor sports, you can work *too* hard at squirrel hunting. A casual, easy-going approach is best. Stroll along leisurely-like. Take in the fall colors and sniff the clean, crisp autumn air. Keep an eye peeled for a good fall of acorns or hickory nuts and signs of nut-cutting. Then pick out a tree that fits your back, loosen your clothes and let the sun soak into your bones. No need to keep craning your neck. A squirrel will announce his presence. You'll know it even, or especially, if you're in a deep sleep.

After a long watch or a short snooze, move to fresh hunting grounds. Move slowly and look and listen ahead for a darting shadow and rustling in the leaves.

Judge Paul's Gift To Virginia

By BETTY W. HARRIS
Quicksburg, Virginia

MANY men have statues for their memorial, some even have entire buildings, but no man could have a finer memorial than a living memorial of nature's work. It is just such a memorial that Judge John Paul created when he recently gave to the State of Virginia 173 acres of old growth hardwood forest.

Judge Paul is a U. S. District Court Judge, who has spent an active live serving his home state well. Though officially retired, he remains more active than many men in their youth.

The Paul State Forest is located at Ottobine, west of Harrisonburg, near the home of Judge Paul. The property has been in his family for four generations since it was acquired from the Shippman estate. The Shippmans originally received the land in a grant by King George II of England. Judge Paul gave the forest land to the State of Virginia to assure that the forest would continue after his death and not be sold to someone who would immediately cut all the trees for the valuable lumber.

Judge Paul, at his beautiful home at Ottobine, was asked about the forest. He is very modest about the gift. When asked to tell something of the history of the woodland, he chuckled and said there was no romance or excitement attached to the history of the forest. It had merely belonged to the family for several generations. He was asked how it happened that the forest was not cut many years ago when people were in the habit of cutting trees indiscriminately. He said, "My family has always been conservation minded. They didn't believe in cutting trees they didn't need." Though there are many wooded areas in the Shenandoah Valley, Judge Paul believes this forest is the largest single tract of old growth timber remaining in the Valley proper.

The Virginia Division of Forestry previously administered six forests, but all east of the Blue Ridge mountains. The new forest is the third state forest donated by an individual. The other two are the Conway Robinson and the Emmett D. Gallion which are also game sanctuaries.

Previously there was little hardwood forest belonging to the state and no state forests of any kind in the western area of the state. This hardwood will enable researchers to round out their work on better forestry practices. They will now have the trees and the land with which to institute continuing research projects.

What is forestry research? Basically it is studying to try to find what makes nature tick. For centuries man accepted the abundance of nature and helped himself as generously as he pleased assuming that nature would continue to provide amply for his needs. Gradually, however, some people began to realize that, as skilled as nature is, if man is careless, nature's balance is upset and the abundance disappears. Forestry research works to determine how man can use what he needs and yet maintain the balance of nature so that future generations also will have abundance.

Since trees do not grow overnight much time is needed before final results of forestry experiments are obtained.

Meanwhile the forest will be available for public use, as

Left to right: Wilson S. Campbell of the State Division of Forestry, stationed at Staunton; Judge John Paul; and T. R. Elliott, Forestry Division, in charge of Staunton office.

are all state forests. The state Division of Forestry is not in the recreation business, but there are recreational as well as educational uses which the public can make of the Paul State Forest.

The view from the edges of the woods is unexcelled. Birdwatchers should find it to be an excellent area to add to their lists. The forest contains many wild berries, strawberries, raspberries, dewberries, blackberries and even wild grapes. In addition there are other plant berries not edible to humans but considered a delicacy by the birds, which assures a large bird population in the forest.

The many oak trees make it a squirrel's heaven. It is possible the area will be opened at a later date for small game hunting.

The forest is a fine place to go if one needs quiet and solitude to meditate or unwind from the frantic pace of 20th Century living. To sit under the extraordinarily tall and straight trees, listen to the wind rustling the leaves far above, and watch the sun flickering down to dance around the ground and underbrush is to find complete relaxation.

Not the least of the values of a state-owned hardwood forest is the educational value. Botany students from nearby schools and colleges can make good use of the forest in their field study. Any naturalist group can further study by visits to the forest. Scout groups should find much of benefit to their scouting programs. Parents interested in teaching their children about nature can visit the forest any time.

For a number of years previous to the gift of the forest to the state, the forestry division has been managing the trees and operating the forest for Judge Paul. Since they have been managing the forest, they have marked and cut certain trees that have reached a mature age. The trees for cutting have been selected according to the best forestry practices. Removal of certain mature trees enables remaining trees to develop better. The trees that have thus far been cut have yielded nearly two million board feet of lumber. Since the state will maintain careful control of the cutting and growth of the forest, it is assured the forest will remain in the best condition for many generations.

Virginia is indeed fortunate to have public-spirited citizens like Judge Paul, Conway Robinson and Emmett D. Gallion, who love their home and have the means for perpetuating some of the state's historic beauty for future Virginians to enjoy.

VIRGINIA WILDLIFE

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CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

VIRGINIA WATERFOWL SEASONS ANNOUNCED. Virginia waterfowl hunters will have a 50-day duck season and a 60-day goose season under the 1962-63 regulations just established by the Virginia Commission of Game and Inland Fisheries. Both duck and goose seasons were set to open at 12 noon (eastern standard time) November 10. After opening day, shooting hours will be from sunrise until sunset except at Back Bay where hunters cannot leave shore earlier than one-half hour before sunrise or shoot later than 4 p. m. standard time. Hunters will be allowed two ducks per day (not to include any canvasbacks or redheads or more than one hooded merganser) plus two bonus scaup ducks. The possession limit on ducks is four (after first day) including no canvasbacks or redheads and not more than two wood ducks or one hooded merganser plus four scaup ducks. Duck season will close December 29.

Coot season will run concurrent with the duck season with a limit of six coots daily or in possession. In addition to the bag limits on other ducks, hunters are allowed five American or redbreasted mergansers (singly or in the aggregate) daily and 10 in possession.

The limit on geese is two Canada geese daily and four in possession plus six brant daily or in possession. Goose season will end January 8.

The waterfowl seasons selected were the maximum allowed by the Fish and Wildlife Service and were set to extend as late as possible into the winter. The two scaup ducks allowed in addition to the daily bag limit of two ducks refer to those of the greater scaup and lesser scaup species commonly called bluebills. Ring-necked ducks, which are sometimes called scaup in the Back Bay area and in other parts of Virginia, may not be taken as bonus birds, but may be included in the daily bag limit of two ducks.

HUNTING AREAS DIGEST AVAILABLE. The Virginia Commission of Game and Inland Fisheries has just announced publication of a "Virginia Public Hunting Areas" digest. All of the sizable tracts of land in the state which are open to public hunting are listed along with acreages, species present, special regulations, camping information and other notes of interest to the hunter. A location guide, which follows the edge-numbering system used on the state highway map, accurately locates each area and detailed instructions point out the roads which lead into the area.

The new digest, referred to as digest A-11, is available from license agents, game wardens or from the Virginia Game Commission, P. O. Box 1642, Richmond 13, Virginia.

LICENSED SPORT FISHERMEN TOTALED OVER 19 MILLION IN 1961. A total of 19,394,177 sport fishermen in 50 states purchased one or more licenses to fish during 1961. This is based on certified information required by the Department of the Interior from 50 state fish and game departments as a basis for apportioning Federal Aid in Fish Restoration funds. In 1960 the total was 19,080,604.

Virginia was officially recorded as having 320,665 paid fishing license holders and was credited with a total sale of 467,162 licenses, tags, permits, and stamps to resident fishermen and 29,940 to non-residents. The total cost to the fishermen was $853,325, which ranked Virginia 22nd in total fishing costs among the 50 states.

Although the number of licensed sport fishermen is large, millions of other persons fish, but are not required to purchase a license. Previous surveys of fishing and hunting by the Bureau of Sport Fisheries and Wildlife indicate there are more than 25,000,000 sport fishermen 12 years or older in the United States, but many are not licensed. These unlicensed fishermen include most of those who fished in salt water along the coasts, and others who are exempt from license requirements because of age, veteran's status, or other reasons.

An example of the versatility of reloading is pictured above. Any of the 16 projectiles shown can all be loaded into the single .30 cal. case, and there are at least four times as many bullets for this caliber as are shown above. L. to r., 220 gr. hollow point; 220 gr. solid; 180 gr. bronzepoint; 180 gr. soft point; 176 gr. cast gas check; 150 gr. soft point; 150 gr. service; 150 gr. hollow point; 150 gr. soft point; 150 gr. round soft point; 108 gr. cast gas check; 110 gr. carbine; 100 gr. short jacket plinker; 70 gr. .30 cal. Luger; 50 gr. #0 buck.

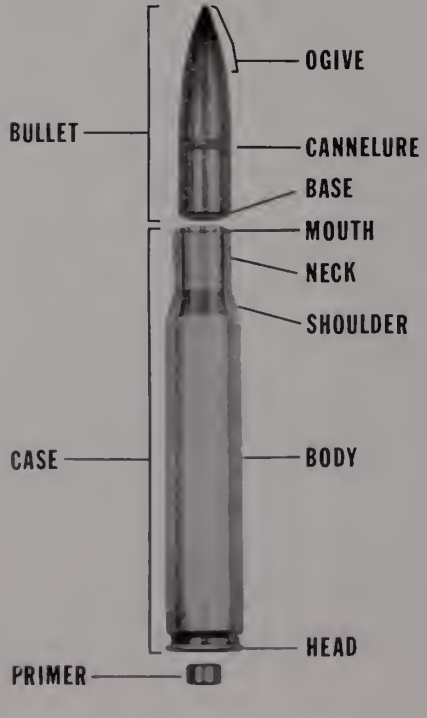
How To Reload Your Own Cartridges

Text and Photos by RONALD F. MARION
Richmond, Virginia

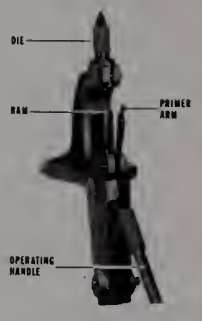
THE bright new castings reflected the light of the glowing charcoal fire. The smell of hot metal mixed with the sharp odor of wood smoke and fresh buffalo hides. Loving care went into the reloading of each precious cartridge. This man, sitting alone on the prairie, was a professional hunter. He knew the value of perfect ammunition, custom tailored for his heavy rifle and suited to his specific needs.

Although the day of the professional hunter in the United States is no longer with us, the practice of reloading ammunition for rifles, pistols, and even shotguns is still carried out —not only by "gun cranks" but even by casual hunters who want to get the most in accuracy and satisfaction from their hobby. For the match shooter, reloading is of necessity both from a cost standpoint and because every inch of inherent accuracy can be squeezed from an arm.

Lead alloyed bullets for pistol and low-velocity rifle shooting can be molded over the kitchen stove from scrap lead hardened with sufficient tin. Shooting cast bullets allows a maximum saving on the ammunition bill. Soft-point hunting bullets are available in so many calibers, weight, and designs it would be impossible to list them all. The slightly higher cost of these bullets (average five cents each) is compensated for by the knowledge that a good clean kill can be made with ammunition that you made yourself. Cast or full metal cased bullets should never be used on big game. A cast bullet is too soft to hold the rifling in the barrel and under velocity it will strip through and cannot be depended upon to give sufficient penetration and expansion on game. Full metal cased bullets, as in military ammunition, for example, are constructed so as not to expand on impact at all. Excellent on the target range, they are not desirable on game for humane and conservation reasons. Still, even with the use of factory made, jacketed pills, about 50 percent can be saved with a few dollars invested and a few hours' work in the evening.



In this exploded view of a .30/06 Springfield cartridge, it is easy to see where the case is made thicker and stronger to withstand great pressure (darker area at bottom of body). The bullet is retained in the case by crimping the case mouth into the cannelure of the bullet. Working pressure of this cartridge is about 50,000 pounds per square inch.



Of the many types of reloading presses available, the "C" type, shown at left above, is the most popular. It is strong and rigid and has sufficient leverage to resize even the largest magnum cases. Dies are available in every caliber. Two dies are used for rifles and three for pistols. The third pistol die expands the neck of the case for easier bullet insertion. Accuracy of powder weight at near maximum pressures is very important. The scale at right has been modified by mounting a magnifying lens in front of the balance pointer to facilitate reading. This scale is fitted with an oil dampening device to reduce scale oscillations.

For some reason unknown to man, two identical rifles will call for a different combination of bullet, primer, and powder weight for best accuracy. In some cases, accuracy and velocity exceeding standard factory ammunition can be obtained with complete safety. Usually, though, finest

Choice of powder is governed by the capacity of the case, the weight of the magnum loads and very small amounts of rapid burning powders for light Weights should be cross checked with the scale. Note the loading block in b and holds 50 cases. Maximum or near maximum should ALWAYS be weigh wreck a good gun. After all the cases are charged, hold the loading block

Before resizing and after a close inspection, fired cases must be lubricated. Oil is too thick and a special lubricant must be used. One good method (at left, above) is to saturate an uninked stamp pad with lubricant and roll the empty cases on it. The mouth of the case may be pressed in the pad to provide lubrication for the neck expanding plug die. Care must be exercised not to get lubricant on the shoulder as this may cause oil dents when driven into the die and make for difficult extraction from the die. After lubricating, the case is placed in the shell holder (center) and with a downward motion of the handle driven into the first die. Here, the neck is expanded and then reduced to a uniform diameter and the pin above the case mouth pushes out the spent primer in the head of the case. When cartridges are to be used in more than one rifle they should be resized for their full length. If any difficulty is encountered chambering the round in the rifle, full length resizing is called for. After resizing, a new primer is placed open end up in the cup of the primer arm (as at right). The arm is pushed into the slot in the ram and then with an upward stroke of the handle is gently seated in the head of the case. Excess pressure on the primer can crush the very brittle priming compound and cause either a hang-fire or a total failure of the round. Every third or fourth reloading the primer pocket should be cleaned with a very small brass brush.

accuracy is attained somewhat short of maximum velocity. Experimenting with powder, bullets, and primers is half the fun of reloading. It seems that there is always the desire to shave half an inch from that last five-shot group size.

The equipment needed for reloading cartridges consists of a reloading press, dies, powder scale, lubricant, bullets, empty brass, powder, and primers. An accurate scale is of absolute necessity. Smokeless powder cannot be measured by bulk as black powder once was. Accuracy must be to the tenth of a grain. Pressures of 55,000 pounds to the square inch are sometimes reached in modern high powered rifles. Excellent books containing reloading data are only as far away as the nearest library or gun shop. Don't start "rolling your own" without one. Many pieces of equipment that improve efficiency can be dreamed up by the individual and constructed at home.

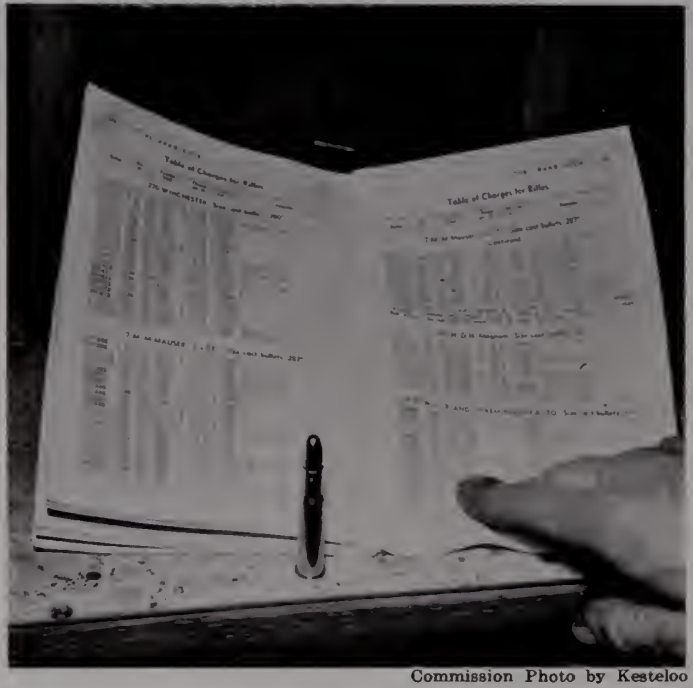
Don't jump into the high velocity problem with both feet. Approach it with caution and good sense, a tenth of a grain at a time. Published loads that result in maximum pressure are always listed as such, and extreme care should be exer-

and the velocity desired. Very slow burning powders are used in heavy
ds. The powder measure (at left) is used to throw light and medium loads.
d. This is a handy item used to hold cases upright. It is very easily made
at right). At high pressure levels a few tenths of a grain more powder can
good light and see that none of the cases have been double charged.

The charged case should be seated in the shell holder under the bullet seating die (as at left). Holding the bullet over the case mouth the operating handle is moved down to force case and bullet into the die. The bullet should be seated so the overall cartridge length will conform to loading data specifications. In general, long, heavy, round nosed bullets are better for hunting in heavy brush as they are not as easily deflected by twigs. Choice of bullet ogive and weight will be dictated by the type of hunting you plan to do.

cised. Remember, maximum accuracy seldom is mated with maximum pressure. Hand loading is no more dangerous than driving an automobile. No intelligent man could consider driving the wrong way on a one-way street at 70 miles per hour. It takes an equally stupid gesture to make a reloaded cartridge a potential bomb. Remember, smokeless powder does not explode. It burns either slowly or very fast depending on what its construction is. If left in the container in which it comes, it is perfectly safe to keep in the house—much more so than gasoline.

There is no more satisfying feeling than seeing the X ring of a target chewed out by ammunition you have reloaded, or making a perfect one-shot kill on a deer 200 yards away with a cartridge that was lovingly "home rolled." Once this thrill is experienced, you'll kick yourself for not having tried it sooner.



Commission Photo by Kesteloo

Check the amount of powder to be used in a particular cartridge carefully. The load must be kept within safe limits.

After all the bullets have been seated, the finished cartridges should be wiped clean of lubricant and boxed. Boxes should be well labeled with all pertinent data. Some bullet manufacturers supply these labels with their bullets. It is a good idea to write the data directly on the boxes themselves in ink. Nothing could be worse than trying to shoot a deer at 400 yards with a load that was made up for short range target practice.

All the planning and all the care in reloading is in vain if time isn't spent on the range testing different loading combinations. A load that shoots well in one rifle may not do as well in another. Careful records shoulds be kept of all loads tried and the group sizes they produced.

A Bear With A Bow

(Continued from page 11)

thing had to give. Very slowly I relaxed the bow. Just as the bow was completely relaxed, the bear came from behind the brush with a fast step. I drew and released. The arrow struck the bear just above the foot in the off hind leg. I am convinced that up until now, he was not aware that I was around. Now he knew. With a burst of speed he cut a quarter circle below me and stopped broad-side 20 steps away. His head was turned looking straight at me, and his eyes were blinking. I do not remember when I took the second arrow from my bow quiver, but there it was in position. The arrow was not nocked to the string. On a new string I had failed to wrap the serving in such a manner that I could nock the arrow by feel. I had to take my eyes off the bear. To look at the bow string and place the arrow in the proper position without any sudden moves took all the will power I could muster. When I raised my eyes, the bear was still motionless except that he was still blinking at me. Deliberately as possible, under the circumstances, I raised my bow, drew, held for a second, and released. My arrows are painted to about one-fourth of the way down from the feather end. I saw the arrow strike in the middle of the rib section and sink to the color mark. Knowing from experience with deer what a broadhead will do, I knew I had myself a bear. He whirled away from me, ran down the ridge and disappeared over the side.

Anything happening from here out is anti-climatic. Thirty minutes later I started to look for the bear, changed my mind, and waited 10 minutes more. Not long after, I found him in a nearby hollow. He had traveled about 250 yards. My second arrow had made a complete penetration within an inch of his heart. There was a cut under his chin where he had struck the arrow point sticking from his side. The feather end was missing. My first arrow had gone completely through his leg just above the foot. I never found this arrow either. The bear was male of the long head type. His coat was glossy black. After tagging him, I went for help. Pulling a 200-pound bear out of the mountains isn't exactly play, but Pierce and I enjoyed every step of the way.

Two Lessons In Habitat Improvement

No. 1—

Tree Farms For Quail and Rabbits

By GEORGE A. GEHRKEN

Wildlife Consultant, Union Bag-Camp Paper Corporation

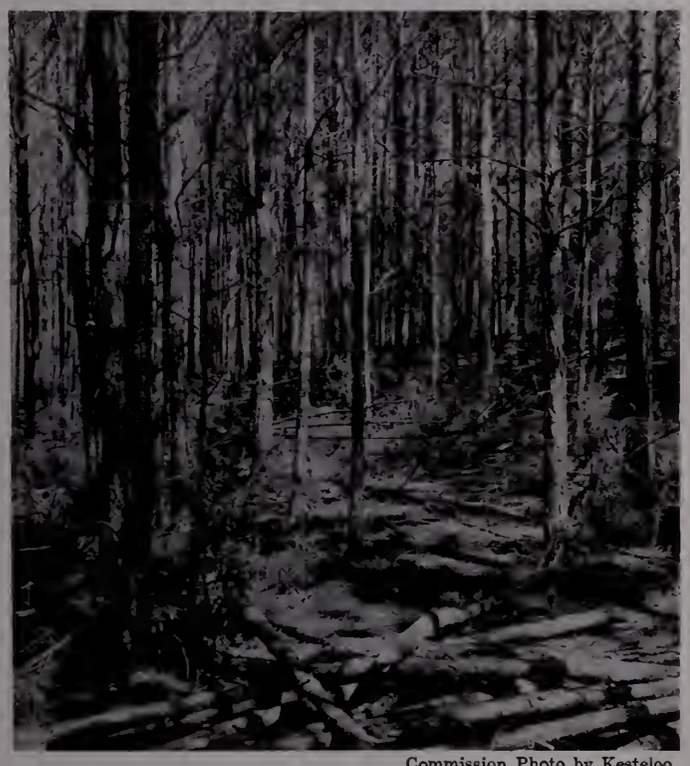
Franklin, Virginia

MOST farmers are interested in quail and rabbits. Many farmers or members of their families like to hunt, others have friends that hunt, while some just like to see the quail and rabbits "about."

Biologists and game managers in the past have overestimated the interest of the farmer in producing farm game. They have expected a great deal of management effort, assuming that he wanted the maximum quail and rabbit population on his farm.

Throughout the Southeast there is a huntable quail and rabbit population. There are a quail and a rabbit to three to 10 acres of land. In a few exceptional locations the populations are slightly higher or lower. That would mean that the average farm of 120 acres, 84 of which are woodland. would normally contain from 12 to 40 rabbits, and one to three coveys of quail in the fall.

Reprinted by permission from July 1961 issue of *American Tree Farmer & Forestry Digest*, published monthly by American Forest Products Industries, Inc. Mr. Gehrken is a member of AFPI's National Wildlife and Recreation Committee and a former game research biologist with the Virginia Commission of Game and Inland Fisheries.



Commission Photo by Kesteloo

"Hunting success is more closely tied to the cover in the woods than any other factor."

Photo by John H. Gerald from National Audubon Society

"The best way to increase quail harvest is by having at least a portion of the woodlands in huntable condition."

Old hunters contacted indicate a noticeable change in habits of both quail and rabbits during the past 20 years. This is due, more than likely, to the intensity of farming operations and increased hunting pressure. Only the quail and rabbits that have been able to cope with these changes have survived; thus we have the modern quail and rabbit. The modern quail feeds very early in the morning and/or late in the evening and then immediately retreats into the surrounding woodland cover. Likewise, since there is little cover in the open land, the present day "Molly Rabbit" spends most of her days in the woods.

The "jet age" hunter beats the brush, shoots "quick," or covers many acres to find his game in the "open."

For the past three years I have hunted the "woods" entirely with excellent results and hunted the fields only enough to get to the woods. After the first week or two of the hunting season, over 70 percent of the coveys located were in the woods. Hunting success is more closely tied to the cover in the woods than any other factor. Therefore, I have learned not to hunt where the woods have not been cut or improved within the past three to five years. My theory of bird hunting is quite simple: "Do not hunt unless you can shoot the coveys and singles in the woods."

What conditions are present when the farm woodland is suitable for hunting?

There must be a one- to four-year accumulation of herbaceous vegetation on at least 25 percent of the woodland floor. This is accomplished by timber harvest, thinning, sustained yield cut, prescribed burning or site preparation.

Trees low enough to shoot over, or open enough to shoot through, are also necessary.

The ideal hunting situation is present the fall after the second growing season, following a clear cut and site preparation, or rough reducing fire. The second year of herbaceous growth in or around old slash not only provides excellent cover for quail and rabbits, but offers superb roosting, nesting and loafing cover for quail. The added sunlight and disturbed soil also encourage many native legumes and grasses that provide food for both species.

This situation provides the biggest bonanza for the hunter. He is able to hunt the places where game spends most of its time, and he has a reasonable opportunity to shoot. The improved hunting conditions in the woods will increase the harvest even if the game population remains the same.

On most farms the annual quail and rabbit harvest is less than 10 percent of the fall population. Recent studies

Photo by Jim Lee

"Many farmers or members of their families like to hunt, while some just like to see the quail and rabbits 'about'."

indicate that these small game species can withstand a 40 to 60 percent harvest without affecting the next fall population. The best way to increase the harvest is by having at least a portion of the woodlands in huntable condition. This can be accomplished by a planned program of forest management which includes regular harvest, improvement cuttings, site preparation and rough controlling prescribed burning.

Population increase can be accomplished by lespedeza (Kobe or Korean), clover and grass plantings on site prepared land, and wood paths, and leaving small amounts of standing grain in the fields in odd corners, and by fencing from grazing small areas (1/10 acre portions) of improved pasture. Slash can be piled after a harvest cut or thinning for cover, and undesirable brush can be cut and piled for rabbit cover, and to improve hunting conditions. Leaving one to four mast producing oaks per acre will generally do as much good as a planted food plot. In a recent research project on an experimental farm, I found that in four out of five years the quail population could be increased by intensive quail management on the agricultural portions of the farm.

The average farmer will leave a small amount of his crops in the field and modify his woodlot management to improve the hunting success on his farm. The practices of the aforementioned forest management techniques will not only improve the hunting success on his farm but increase the amount of farm income and the value of his woodland. Tree farmers who are intensely interested in these small game species can make temporary plantings on site-prepared land and wood paths, and construct escape shelters in the woodland.

Quail and rabbit management need not stand on its own in the Southeast. Good forest management practices aid these species as much as any of the other game management tools. Tree farm practices also double or triple the hunter success and increase the harvest.

No. 2—

Trout, Floods and Gabions

By JIM MULLAN and HAROLD BARRETT
U. S. Forest Service
Harrisonburg, Virginia

TROUT, as mother knows, are those prettily spotted fish that dad spends the springs pursuing and which junior inevitably catches. Floods have been with us since Noah. Gabions may require some explanation.

As Italian as Gina Lollobrigida and spaghetti, literally speaking, gabion means wire basket, not to be confused with the kind found at the local supermarket with wheels. Rectangular in shape, but variable in size and coated to insure long life under water, these baskets are filled with rocks and are used as "building blocks" in the construction of structures designed to lessen or eliminate the damage done by rampaging flood waters.

Floods have ravaged Italy since Classical times when her mountainous slopes were denuded of primeval forests by fire and goat. In the ensuing centuries many and varied attempts were made to control the damage done by the raindrop that would not stay put. Invariably the battle was lost when conventional rigid retaining walls, piers, revetments and other types of structures used to control running water "came tumbling down like the Walls of Jericho," not from any musical aberrations, but from the tremendous eroding power of water to undermine and, therefore, topple such works. Gabion structures being made of strong but flexible wire bend but do not break, thereby eliminating the threat of washouts. Like Gina, gabions harmlessly contour to their constantly changing foundations.

Unlike spaghetti which has been around a long time, gabions represent a new transplant to North American shores although used in Europe for almost a century. The George Washington National Forest pioneered their use in this country, starting in the mid-1950's, in experimentally treating several miles of headwater stream bed and channel of the North River which was "torn asunder" by the devastating flood of 1949. Since then, their use by state and federal agencies to control and manipulate running water for almost any conceivable end—road and bridge protection, check dams, low-water bridges—has spread, and continues to, attesting to the versatility of the gabion construction principle.

The connection between gabions and trout, while not apparent at first, is an obvious one once the implications of floods on trout are grasped. Of course, floods and trout have been the subject of debate among anglers for years. Many claimed floods were responsible for irreparable havoc to trout habitat, while others countered with "floods had occurred from time immemorial and stream trout fishing hadn't become extinct."

Studies have pretty much eliminated this contention from sessions of the "Hot Stove League" in recent years. Although water was once considered the only prerequisite for fish, like a wet miserable day for ducks, anglers have become quite aware that the different species of fish, besides requiring water of a certain temperature and oxygen range,

Flooding destroys the trees and other vegetation that stabilizes stream banks. When this happens, the banks are continually washed into the stream to smother and abrade spawn, spawning sites, pools, and bottom fauna on which trout depend for food.

No one knows for sure whether gabions can turn the clock of time back to make native trout habitat of eroded streams, but advantages include good holes above and below cross-channel gabions for put-and-take trout fishing, and stabilization of shifting rubble.

Wall gabions are installed to arrest further erosion. Until the banks are kept from "unraveling" and adding new rubble to the channel, the streambed will not be good trout habitat.

Gabions are wire baskets filled with rocks and used as flexible building blocks. Here is a double wing deflector which concentrates flow and scours out a pool to improve trout habitat.

also require food, spawning areas, escape cover, and other basic needs associated with a stable environment.

Flooding invariably results in devitalizing, if not lethal, extremes of living conditions. On a New Zealand trout stream 80 to 90 percent of that year's spawn and at least 50 percent of the bottom fauna was destroyed by one flood. With the seed trout and food gone, the stream was years in recovering. Closer to home, a Fish and Wildlife Service team studying the streams of the Shenandoah National Park from 1952 through 1959 found both trout and aquatic insects stranded in woodland pools some distance from the stream following a flood. The pools subsequently dried and the fish and insects died.

In addition to the more immediate havoc exerted on trout, especially hatchery trout, which are least suited to cope with strong currents, flooding has a cumulative depressive effect on the ability of a stream to support trout whether they originate as wild or hatchery fish.

The delicacy of balance in a stream whereby a slight increase in water temperature renders the stream unfavorable for trout is well known. Flooding destroys the trees and other vegetative cover that stabilize stream banks and widens the stream channel, thus effectively raising water temperatures by more fully exposing the stream to the influence of the summer sun. Silt, sand, clay, and gravel washed into the stream from the eroding banks insidiously smothers and abrades spawn, spawning sites, cover, pools, and bottom fauna on which trout are dependent for food.

Once such a process starts, each succeeding flood becomes progressively more damaging. As stream bed materials become loose and unstable, the eroding power of the water increases. With the stream channel choked with eroded materials, the cutting force of flood waters is directed towards the banks, adding still further materials to the bed load. So, a vicious cycle is begun, with ever-increasing destruction to the trout habitat.

The purpose of the extensive gabion construction program on the upper North River by the Forest Service is to arrest this cycle of erosion. While not primarily predicated on improving living conditions for trout, it can be seen, nevertheless, that trout and trout fishing have a big stake in the outcome of this stream bank and channel stabilization phase of an overall flood control plan for the drainage.

Can the clock of time be turned back and the stream restored as productive native trout habitat through the use of gabion structures? No one can say for sure. However, there is no doubt that the avenue of attack is correct, and the best tool available is being used in the battle. Until the banks are kept from "unraveling" still further and adding millions of tons of new rubble to that already present in the channel, the stream bed will not stabilize and become suitable aquatic pasturage for respectable numbers of native trout. True, it may be decades or even centuries before this goal is reached. Even so, immediate side advantages, such as good holes below and above cross channel gabions for put-and-take trout fishing and stabilization of much of the shifting rubble within the wire baskets themselves, are being registered. After all, the hundreds of similar water courses cutting the Appalachian Mountain chain did not evolve as good trout streams overnight, even though lost in such a span, and we spend billions on rockets without absolute assurance that they will work when fired.

Wildlife Conservation Unit 2, Birds and Game Bird Management

Study 1 - -

The Parts of a Bird and Their Functions

By DOROTHY E. ALLEN
Education Officer

OUR *objectives* are:

1. To learn about how birds evolved into their present forms.
2. To learn the basic anatomy of birds.
3. To understand how a bird flies.

Birds are warm blooded animals with backbones. They are different from other animals in that they have wings and are covered with feathers. Because of their ability to fly, birds are probably the most active animals we know. In order to fly, birds must have energy. To have a continuous supply of energy, the food that birds eat must be digested rapidly. All body processes in birds are speeded up to provide for their active existence. Among birds there are hundreds of modifications of structures fitting them for life in their individual habitats.

TEMPERATURE—Birds get most of their warmth from the "burning" of the food they eat. They are warm even when their surroundings are cold. The body temperature of some species is as high as 112 degrees Farenheit. They can conserve their body heat by lifting up or "fluffing" the feathers, thereby widening the insulating layer of air between feathers and skin; they can increase their body heat by stimulating muscle activity through shivering.

MOUTH AND TONGUE—The covering of a bird's tongue is thick and horny. It contains bones and is attached to the floor of the mouth. The form of a bird's tongue is remarkably varied, often being strongly adapted to particular methods of food getting. The woodpecker has a horny-tipped tongue covered with barbs and muscle extending it with force into a chiseled hole. A pair of large glands in the floor of the mouth coats the tongue with a sticky fluid to capture the insect under the bark. The sapsucker's brush-like tongue fills with sap as a paint brush fills with paint. It also serves as a tiny broom to sweep in the insects attracted by the flowing sap. Ducks have a very thick fleshy tongue with lateral processes which serve, in conjunction with their bill, to strain food materials from water and diluted mud.

ESOPHAGUS—The esophagus serves in all birds as a temporary reservoir for food. In geese, it may be so greatly filled as to make the neck bulge. Gallinaceous birds (pheasants, turkeys, grouse, quail) and the pigeons have a crop. This is primarily a place for food storage. This food can be regurgitated into the mouths of young birds.

"TEETH"—The first birds had teeth, but the birds of today do not. Their "teeth" are in their muscular gizzards, which grind food with the aid of small pebbles swallowed periodically by the bird. The digestive processes are very rapid and perfect. Food swallowed whole is softened by juices from the stomach and passes on to the "mill" (gizzard) where gravel helps to grind up the food.

In addition to preparing food for digestion, the gizzard serves as the principal barrier to indigestible materials such as feathers, fur, bones, animal shells, etc. These are usually spit out in spindle-shaped wads called pellets.

INTESTINES—This is the principal organ for the digestion and absorption of food. Once in the intestine, food undergoes complete chemical changes. This organ acts as a separator, with the intestine absorbing food that has been chemically changed so it reaches the blood stream and passes on the remainder to be discarded. The intestine of seed and herbage eaters is longer than in flesh eaters, for the food is more bulky in proportion to its nutritive content and a longer intestine has more surface for absorption.

SKELETAL AND MUSCULAR SYSTEM—The bird's skeleton is delicate yet strong. Many of the bones contain air cavities. The flexible neck has vertebrae that are saddle shaped and permit free movement of the head in feeding, preening and other activities. The wings contain bones similar to those of your forearm. Birds have a "wish bone" or furcula to which the wing muscles are attached. The movement of the wings in flight is chiefly controlled by the muscles of the breast (the "white meat" of turkeys).

In recent years it has been found that the flight muscles can serve as a measure of power in the air. Likewise, muscles of the lower extremities represent the power for terrestrial or aquatic locomotion, while the heart weight bears a direct relation of the ability to sustain activity. The heart limits the activity of a bird. Whatever the size of this muscle, it cannot act for long without an adequate circulation.

Did you ever wonder how birds can perch on a branch and go to sleep without falling off, even if rocked severely

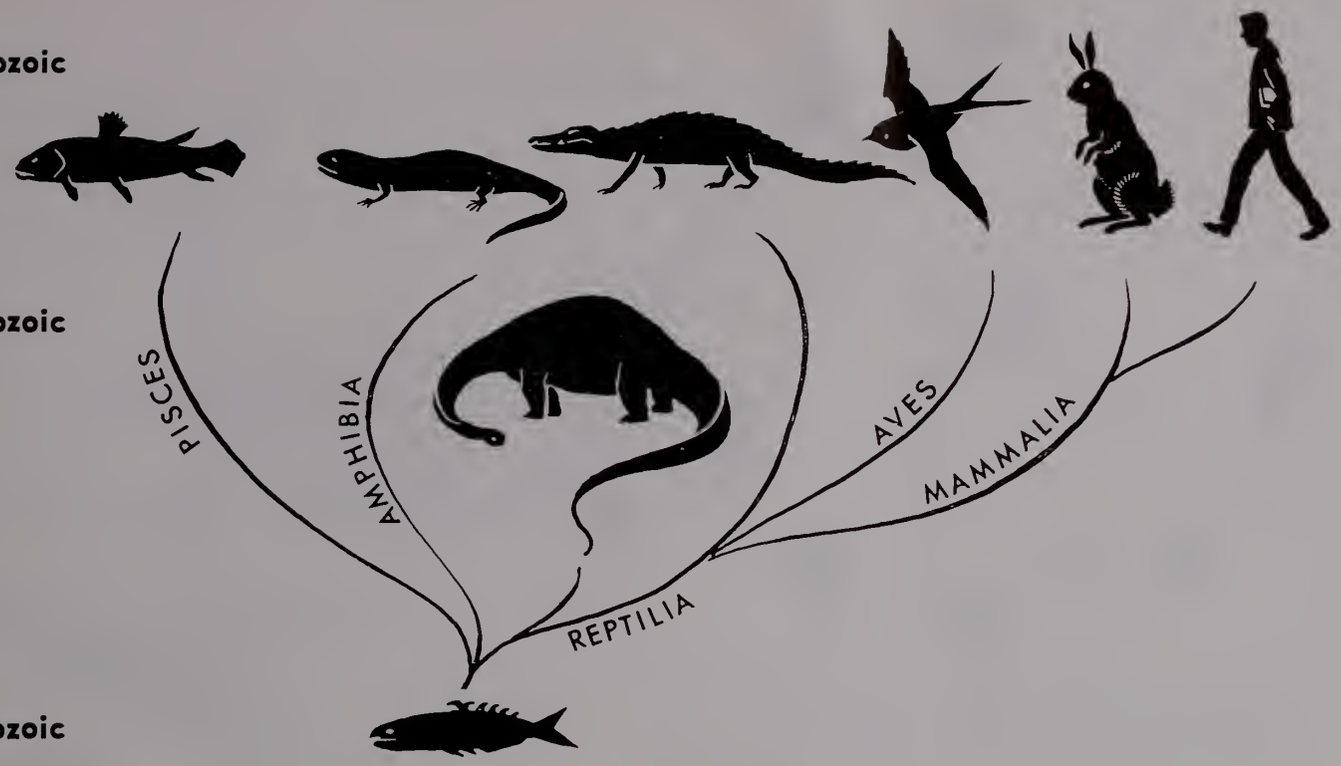
Attention Teacher

This unit, on game birds, will resemble in its approach our previous unit on fish. The first question you may encounter is: Where did birds come from? To answer this question, it is necessary to know a little about the evolution of life. Study of the family tree of vertebrates will enable your students to understand how birds came into being. The students may even be surprised to learn that Darwin's "survival of the fittest" does not mean "mightiest," but good adaptation to its environment. "As a rule, living things which survive and reproduce the greatest number of young are those which get along better in the whole business of living." Living things often change with the environment as new adaptations—"mutations"—allow them to live under new conditions.

Among birds there are hundreds of modifications of structures fitting them for life in varied environments. Modifications of eyes, bills, tongues, tails, wings, feet, and shape of body all play important parts in the lives of birds. We have many different kinds of birds because of their special adaptations to live in different situations.

With this understanding, we can proceed to study the parts of a bird in general and their functions. It will then be easier to understand why we find some birds that live permanently in woods, others on the shore and still others which migrate from one place to another.

Subsequent studies in this unit will deal with identification and life histories of game species, food and cover requirements, harvesting the biological surplus, and management practices carried out by the Game Commission.



PRESENT TIME—

Both mammals and birds expanded as new adaptations made it possible for them to evolve the wealth of varied animals we know today, including ourselves.

CENOZOIC—

The main adaptation of the mammal was its method of reproduction: the development and nourishment of the embryo within the body of the mother; the production of milk to nourish offspring when young and helpless and the care of the young that went with this adaptation; the development of the four-chambered heart; temperature control; and a warm, hairy covering. The birds also developed a four-chambered heart, temperature control, and a warm insulating covering—feathers—which also were involved in their most important adaptation, flight. The birds have kept the amniote egg as part of their method of reproduction. However, unlike reptiles all birds care for and feed their young.

MESOZOIC—

Vertebrates did not become entirely free of the water until the development of the amniote egg. Its tough shell protects the embryo and preserves the necessary watery surroundings when the egg is laid on dry land. The large yolk provides enough nourishment for the new life to grow to a more advanced stage before it hatches. Beginning with the reptiles the evolution of the amniote egg was an event of the greatest importance in the history of vertebrate life. The evolutionary spread, or radiation, of reptiles reached its peak with the great host of dinosaurs. By mid Mesozoic times, about 150 million years ago, two new classes of land vertebrates evolved from the reptiles, mammals and birds.

PALEOZOIC—

Life was confined to the water for millions of years. Swim bladders of certain fishes evolved into lungs. Lobe fins became adapted as crawling legs. The first vertebrates to appear on land were amphibians. They varied in size from a few inches to 15-foot monsters. Their modern descendants are the salamanders and frogs. Their soft, jelly-covered eggs cannot develop on dry land.

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by the wind? A sleeping bird is actually "locked" on the branch. When a bird relaxes in sleep, its body slumps down on its feet. In this position the tension on the leg muscle and tendon causes the toes to flex and grasp support.

Birds have lungs just as we do, but they also have many air sacs in their bodies which we do not have. These air sacs help to make it easier for them to fly. Air flows into the lungs and on into the air sacs and to cavities in the larger bones. The tiny air sacs act like little hot-air balloons. Expiration (breathing out) takes place with each upstroke of the wing. The faster the wing moves, the faster the bird breathes, preventing the bird from getting "out of breath."

SMELL—Probably the majority of birds have a poor sense of smell; choice and rejection of food materials probably depend on the taste buds in the roof of the mouth and at the sides of the tongue.

HEARING—In most cases the ear is simply a hole in the head, situated below and behind the eye, more or less covered with feathers. The ear is not sensitive to a wide range of sounds or sound waves and is inferior to that in most mammals.

VISION—Most birds have extremely keen eyesight. The eyes of birds are notoriously large; they are the biggest structures of the head, and they often weigh more than the brain. If human eyes were proportionally as big, each eye would weigh approximately five pounds. The eyes of birds are more or less fixed in their sockets and so can be moved only to a very limited degree. Because the eyes are placed at the side of the head, the bird looks first with one eye and then the other to be sure it sees correctly. This is accomplished mainly by cocking the head to examine an object on the ground. They can nevertheless view by peering straight ahead at an object with both eyes. An extra transparent eyelid acts like goggles to keep the eye clean, reduce glare

The development of wings and feathers were adaptations which made it possible for birds to fly and to take advantage of ways of living not possible for flightless animals. Once birds had evolved as flying animals, further adaptations resulted in many different kinds of birds suited to live in many special ways. Sea birds, shore birds, birds of prey, birds of the woods, birds of the open fields, birds of the night, swift fliers, slow fliers, swimmers, divers, and even flightless runners like the ostrich evolved. This evolution which spreads living things out into every conceivable way of life possible for them is called "adaptive radiation."

Much of this material adapted from The Science of Life by Lois and Louis Darling. The World Publishing Company, Cleveland, Ohio and New York. $4.95. Copyright 1961.

and prevent excessive watering which flying through the air might induce. This membrane also protects the eyes of diving birds and underwater swimmers. Birds can adjust their eyes for either near or far vision much more effectively than we can. Hawks, eagles, and vultures, particularly, benefit by being able to sight their food at great distances. Birds are believed to be able to distinguish color.

BEAKS—The horny and sharp beak acts not only as a pair of nippers, but also as a pick as the bird strikes it into the soil to get seed or insects. A bird also uses its beak for cleaning and oiling its feathers, fighting, building nests and turning over eggs. The form of the bill usually indicates the food habits of a bird.

Most ducks, geese and swans have wide scoop-like bills with which they can "shovel in" submerged plant and animal food. The water is forced out through the sieve-like edges of the bill while the food is retained. The fish-eating merganser ducks have a narrow bill with sharp serrations along the margins which must be quite an aid in hanging on to a slippery fish. Shore birds usually have rather long bills with which they probe for food.

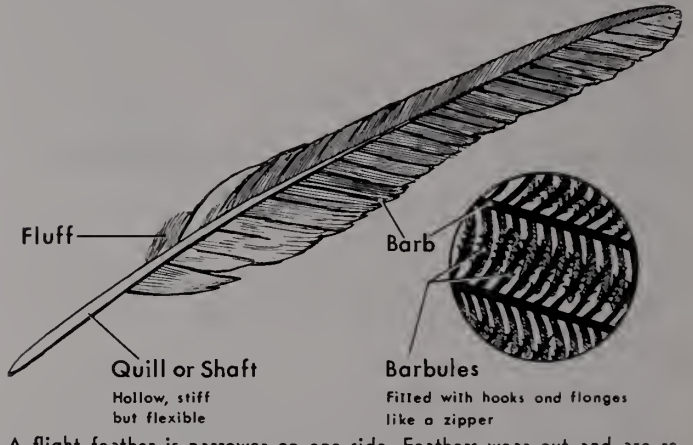
FEET—The feet of birds serve variously for running or climbing, for support of the body at rest, for arranging nest materials, and in some species for handling food and for offense. Stout feet for scratching are common in the quail and other ground dwellers. Webs between the toes occur in most birds that swim on or in the water. Webbed feet serve as "propellers" for locomotion beneath the water.

FEATHERS—The bird's clothing—feathers—is a most striking characteristic, distinguishing birds from other creatures. The large feathers are attached to the bones of the wings. Those attached to the bones which correspond to the hand are known as *primaries* and are usually the largest. Those attached to the forearms are named secondaries. The bases of these wing-quills are covered by other fairly large feathers known as the wing-coverts.

The shaft or quill is the central hollow stiff stem of the feather. Barbs come off from the quill toward the outer end, join together (like a zipper) in a smooth web, making the thin, fan-like portion of the feather. At the base and near the body of the fowl is soft fluff.

Down is a feather with no quill. When young chicks pop out of their shells they are covered with down. A pinfeather is a young feather rolled up in a sheath, which bursts out later and is shed.

On the bird's back just at the base of the tail feathers is an oil gland, concealed by contour-feathers. This oil gland secretes a substance containing much fatty acid plus some fat and wax. The bird squeezes the gland with its beak



A flight feather is narrower on one side. Feathers wear out and are replaced by a whole new set (molt) in the fall.

to get the oil and then rubs the beak over the surface of its feathers and passes them through it.

A bird's streamlined body is another help in flying. The surface areas involved in flight are the wings used in propulsion, the tail and wings for steering, and the tail and body for gliding or soaring. Long, narrow wings are adapted for soaring and short wings are for bursts of speed.

Suggested Activities

1. Take a dressed fowl and look at its wings to see how it corresponds with our hands.
2. Find a bird's feather. See if you can determine what part of the body it came from.
3. Take a large pinfeather, cut the sheath open, and look at the young feather inside.
4. Open a large umbrella, hold it over your head and jump from a step. Air presses up against the wings of the bird just as it does against the open umbrella.

Some Reference Materials

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"Virginia Game Birds," "Virginia Birds of Prey," "Virginia Winter Birds," "Virginia Summer Birds," Commission of Game and Inland Fisheries. Set of 4 20x30-inch full-color charts. $2 per set.

"Virginia Mammals," "Virginia Game Birds," "Virginia Winter Birds," Commission of Game and Inland Fisheries. Set of 4 20x30-inch full-color charts. $2 per set.

These 16-mm motion pictures in color are available from the game commission free of charge: Birds Are Interesting (11 minutes), Birds of North America, # 3 (10 min.), Conservation In Action (11 min.), Prescription for Wildlife (33 min.), Yours for a Song (22 min.).

NEXT MONTH: Study 2.—Identification of Game Birds.

Bird of the Month:

The Lesser Yellowlegs

By DR. J. J. MURRAY
Lexington, Virginia

OF the many lovely sounds of the marshes and the mudflats, none is more melodious than the flute-like whistles of the yellowlegs. Always on the alert, they are the first among the feeding flocks to sight the coming of a man and to give warning to their companions as they take wing.

There are two species of the yellowlegs, both of them among the commonest and most beautiful of our shorebirds, so much alike that it would be almost impossible to distinguish them if there were not a difference in size. This difference is pointed out in their names, the *greater* and the *lesser* yellowlegs. We might almost call them yellowlegs senior and junior, since the lesser yellowlegs is about one-fourth smaller than the greater.

The names of both species come from the color of the long slender legs. Similarly, in England they have a *redshanks* and a *greenshanks*. The lesser yellowlegs is a graceful bird. From tip of bill to end of tail it runs about 10 to 11 inches. Underneath it is white, with the breast streaked and spotted, while on the back the brownish-gray feathers are dotted with white. The yellow legs and the large white rump patch are the most distinctive marks.

There is a noticeable difference between the calls of the two species. The greater yellowlegs has a call of three or four syllables, "wheu, wheu, wheu," while the lower pitched note of the lesser usually has two syllables, "cu, cu." Both are noisy birds, frequently calling attention to themselves; but who would want a sweeter sound than the notes coming from a mixed flock of the two species high in the air.

The lesser yellowlegs nests in the far North, from the upper Yukon Valley in Alaska across to northern Quebec. Twice a year it makes the long, long trip between its semi-arctic breeding grounds and its winter home in lower South America. In Virginia, in spring and fall, we find it a common and welcome visitor, not only on the coast but on any inland pond. It is chiefly from March to May and from late July to November that we see them but stragglers can be found in winter in eastern Virginia. Very rarely a bird is found in summer, a wandering individual that has lost the migration urge. On these visits to us it is found on the mudflats rather than on the beaches.

Formerly both species, but particularly the larger bird, were extensively hunted along the coast. During these migration periods they were slaughtered by market hunters in enormous numbers. That has been stopped, with the result that the birds have made a good comeback. And the true sportsman gets far greater pleasure from seeing the graceful birds and hearing their wild calls than ever he did from shooting them.

Edited by DOROTHY ALLEN

Seed for Wildlife Food Patch Contest

This spring Max Carpenter, game biologist, distributed seed for wildlife food patches to members of the Elkton F.F.A. chapter participating in a contest sponsored by the Merck Rod and Gun Club, Inc. Seed for the boys to plant one-eighth acre was furnished free of charge by the Commission of Game and Inland Fisheries.

Judging will be done this fall by members of the Game Commission, Future Farmers of America sponsors, and Merck Rod and Gun Club committee members. Prizes are furnished by the Merck club.

District Game Biologist Max Carpenter (second from left) gives wildlife food patch seed provided by the Virginia Game Commission to members of the Elkton F.F.A. Chapter.

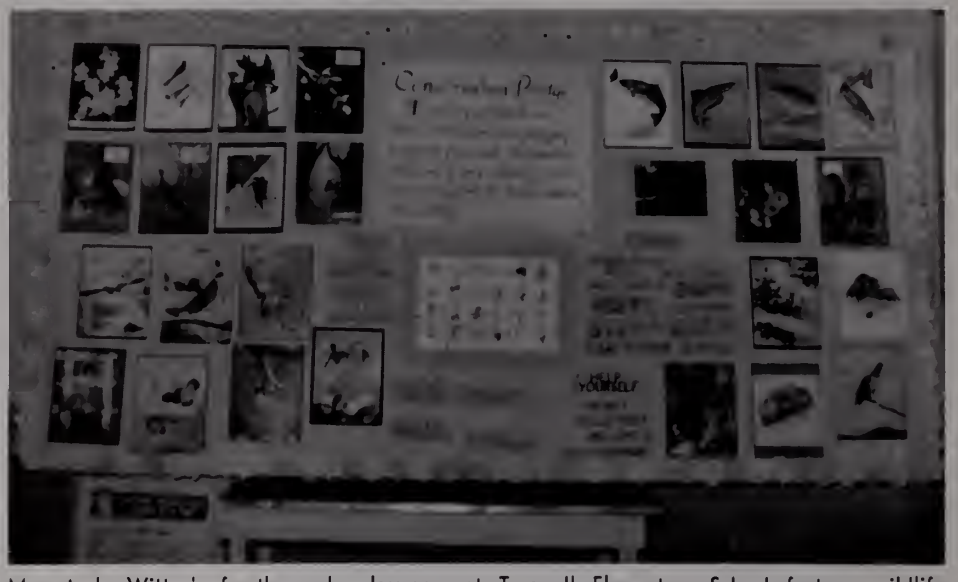
Students Study Natural Resources

Last spring students in Mrs. Andy Witten's fourth grade at Tazewell Elementary School studied conservation of natural resources and made written and oral reports on the different resources. Following are three of the reports:

Why Soil Is Important To Us

In the conservation pledge it says, "forest, water and wildlife." I have underlined forest and wildlife because if we did not have soil we couldn't have trees or flowers and we couldn't have some of the wildlife that we have today. This is so, because animals eat plants and plants are grown from soil. In a film, we saw that it takes 200-800 years to replace one inch of good top soil, but it takes only one big rain to wash it away. Do you know that when the first settlers came here there were nine inches of topsoil, and now there are about six inches left? We should take care of our soil. If you like flowers you will know one of the reasons why. Without soil there wouldn't be any living thing on earth. Now do you know why soil is so important?

—Sue McAnnis and Tiffany Hilton



Mrs. Andy Witten's fourth grade classroom at Tazewell Elementary School features wildlife conservation.

Why Forests Are Important To Us

One of our natural resources is forests. They are very important to us. If we had no forests we would not have as many kinds of wildlife as we now have. Many animals live in the forests, such as deer, beaver, some birds, fox, squirrel, raccoon, cotton-tail rabbit, black bear, opossum, grouse and ground squirrel. Our trees give us the pleasure of the cool shade in the summer. Our forests also have streams of water for fish. Our forests give us wood for fuel and wood for buildings and furniture. Forests are beautiful in Virginia and we should take care of them and keep them beautiful.

—Patricia Jennings and Deborah Wells

Why It Is Important To Keep The Wildlife We Have In Virginia

In Virginia we have many game birds and animals. But it is important to keep them from becoming extinct. Many, like the snow goose, became scarce. At one time there were only 5,000, but protected under the law, they prospered and thrived. The passenger pigeon has already become extinct. At one time there were billions. They were shot by the thousands until there were only six males and one female. All died except Martha, the female named after Washington's wife. She died at the age of 29. She was stuffed and sent to the Smithsonian Institute in Washington. A pair now would be worth $10,000. The importance of keeping these birds and animals from becoming any more scarce is not only because of their beauty, but because some of them protect and give us food. For instance, birds eat bugs that harm farmers' crops. So it is important to keep Virginia's birds and animals from becoming extinct.

—Lisa Baird and Becky Talbert

Mrs. Anna Krehbiel's fifth-grade class of Mantua Elementary School, Fairfax, Virginia, reseed a bare spot on the school lawn and filled gullies on the school's lower hillside. Such projects aid in the teaching of conservation.

Edited by HARRY GILLAM

Virginia Wildlife Sales Contest Winners

The Patrick Henry District team led by I. H. Vassar, game warden supervisor, was named the winner in the Virginia Wildlife subscription contest. J. R. Bellamy of that team, Chesterfield County game warden, was proclaimed top salesman for the state with a total of 523 subscriptions. The Patrick Henry team sold a total of 3,420 subscription years.

The Game Commission field force was divided into six teams for the competition with a total goal of 15,000 subscription years. Although the goal was not reached, 10,031 subscriptions were sold, boosting the Virginia Wildlife circulation considerably.

The Thomas Jefferson team under the direction of V. J. Whitmer, game warden supervisor, was the only other group to exceed its goal. William H. Fadely, game manager on the George Washington National Forest, was recognized as the number two man in the state in total sales with 329 subscriptions. Game wardens McGuire Morris of Powhatan, Malcolm Booker of Appomattox, and H. I. Todd of Staunton were all commended for selling over 200 subscriptions.

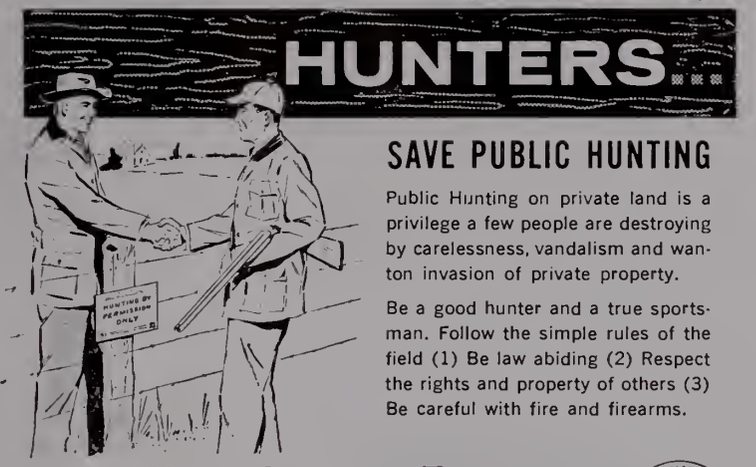
Members of the winning team and outstanding individual salesmen will receive certificates and will be honored at special ceremonies.

Hunting By Permission Only

The Izaak Walton League of America, its chapters and state division, with the cooperation of the National Sporting Goods Association, sponsors a conservation education program each year during "Hunt America Time"—the fall hunting season when millions of Americans go afield to enjoy their unique heritage of public hunting.

This year IWLA chapters in Virginia's metropolitan areas are emphasizing educational programs. This is important since it has been proved that most damage to property and livestock has been done by young city hunters who go hunting for something to shoot at whether it be game, signs, trees, or a cow mistaken for a deer. Rural area chapters are emphasizing good relationships between farmer and sportsman. Sam Hayden, IWLA state chairman of HAT, says, "The landowners will remind you that 'The game may be yours, but the land is mine.' The hunter replies, 'the land *may* be yours, but that's my game.' We in the League believe both are right, and our objective is to keep it that way."

To accomplish this, League chapters work on two priority projects: (1) Contacting hunters *before* seasons open (at sporting goods stores or special booths erected for the purpose) and asking them to *sign* the HAT pledge (pledge cards are provided), *display* the HAT badge while hunting, *observe* the HAT pledge afield, and *demand* that other hunters observe this pledge; (2) Contacting landowners before hunting seasons open and providing them with free "Hunting by Permission Only" and "Safety Zone" signs, assisting them in posting these signs and patrolling against trespass and vandalism (subject to law and landowner's wishes). As an individual hunter you can support the HAT program; also join a responsible conservation organization and work for conservation and sportsman-landowner relations all year.



Virginia chapters of the Izaak Walton League of America are promoting "Hunt America Time" this hunting season to create good will between landowners and sportsmen to save the tradition of public hunting on private land.

Ted Miller of Berryville, Va., caught this 5-pound, 7-ounce smallmouth bass April 29, 1962, in the Shenandoah River in Clarke County.

Game Management Booklet

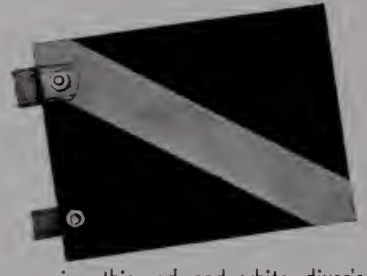
An excellent new booklet, "Principles of Game Management," is available without charge to all interested persons from the Conservation Department, Olin Mathieson Chemical Corporation, East Alton, Illinois.

Authored by John Madson and Ed Kozicky, the booklet brings under one cover a series of six articles on game management previously issued as separate items in Olin's "News from Nilo." The articles discussed hunting regulations, predator control, game refuges, stocking, habitat restoration, and game and habitat analysis.

Edited by JIM KERRICK

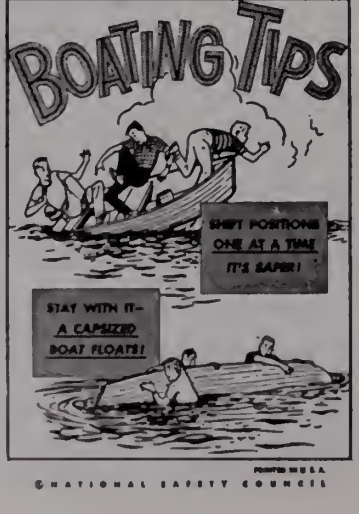
The Diver's Flag

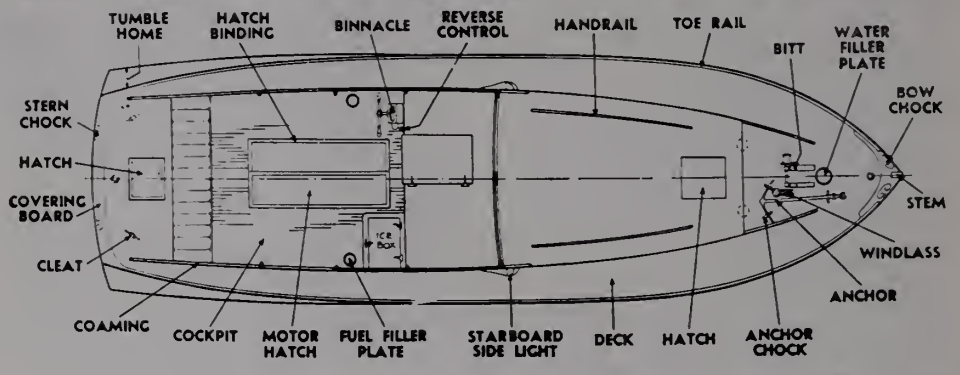
The current popularity explosion of scuba diving has brought to Virginia boaters another signal flag—the diver's flag. The bright red flag with the diagnal white stripe running from top left to lower right corners, flying from the signal mast of a boat or from a floating device, indicates that there is an underwater operation below. Courtesy and safety require that a power boat should not come within 50 feet of such a flag.



Boaters—give this red and white diver's flag a wide berth.

The prop on your boat can be a vicious and deadly weapon. A swimmer or diver, just under the surface, is completely invisible and helpless. Although he can hear your motor, it is not possible for him to tell the direction from which it is coming. It is important, then, that this signal be respected. In other states, boat owners have used this flag as an invitation to play a sort of nautical game of "chicken." This is dangerous and criminal and can result in fatal injuries —R. F. Marion





From *Motorboating*

Chesapeake Bay Croaker Outlook Improved

Biologists of the Virginia Institute of Marine Science have predicted a substantial increase in the number of croakers in Chesapeake Bay by 1963, based on better survival of young croakers noted during the past mild winter. Studies have shown a ten-fold increase in the survival of young croakers in the bay over the average of the past five years. Pinheads (six to eight-inch croakers) should begin to appear in larger numbers late this summer and both the commercial and sport fisheries should show improvement by 1963. Large croakers from this spawning season will not appear until 1964.

There is evidence that the extremely cold winter of 1957-58 had a great deal to do with the severe decline of Chesapeake Bay croaker populations over the past few years. Scientists feel that a series of mild winters could boost croaker numbers to their former level.

Should Operator's License For Boaters Be Required?

On May 10, 1962, Congressman Charles E. Chamberlain (R.-Mich.) introduced House bill H. R. 11703 prefaced, "A bill to provide for the licensing of operators of certain vessels on the navigable waters of the United States. . . ."

If passed, this bill would require that (in peacetime) all boat registered under the Federal Boating Act of 1958 be operated *only* by persons duly licensed by the Secretary of the Treasury; that no person *under* 12 years of age be licensed; that persons between 12 and 15 years of age have aboard someone duly licensed and 21 years old or more; that to get a license one must pass a physical and mental examination and pay a fee; and that anyone violating these regulations would be subject to a fine of up to $100 or imprisonment of up to 30 days.

The bill has been referred for further action to the Committee on Merchant Marine and Fisheries, of which Representative Herbert C. Bonner—author of the 1958 Act—is chairman.

If Your Outboard Does Not Start

Here's a 10-point check list that will help you to get at the source of trouble if your outboard doesn't start:

1. Is there gasoline in the tank?
2. Is the vent in the filler cap clogged or closed?
3. Is the shut-off valve open?
4. Is anything blocking the fuel line or gas tank screen?
5. If you have a separate fuel tank piped to the motor, is the filter element on the engine clean and the filler cap on the tank tightly closed? Is there sufficient pressure in the tank?
6. Are the spark plugs corroded, chipped or cracked?
7. Are there any loose wires?
8. Do you have the correct gap between spark plug electrodes?
9. Do you have the right mixture of gasoline and oil?
10. Is there water or dirt in the fuel? Check the strainers.

LETTERS

YOU publish a beautiful magazine, but if you'll excuse the expression, some of the statements therein are pure baloney—and surely you know it. Take, for instance, Mr. Gildea's allegation ("Hunting and Fishing are Good Conservation Practices") that sportsmen must "take" game birds or there'd be an overpopulation of same. The plain truth is that most states must pen-raise quail, chukar, wild turkeys, pheasants, etc., in order that the sportsmen may have their fun. Recent figure for pen-raised game birds annually in California—108,000; Tennessee—10,000; New Hampshire—18,000. *(Virginia does not stock before the gun.—Ed.)*

And arms and ammunition manufacturers raise wild ducks to be shot off chutes where gunners are waiting for them behind blinds. Blinds not to keep the gunners from the view of the ducks, but to keep the gunners from viewing the birds being released from the chutes and thus destroying the illusions with which they are kidding themselves. Wild duck populations have been hanging by a thread many years from the banging they get from millions of hunters. Yet open seasons continue —the sportsmen demand it; never mind the consequences for the future.

So long as there are weeds to produce seeds, there will never be an overpopulation of quail and doves to worry about. You know as well as I that hunting is Big Business and a bloody business. The general public is becoming increasingly aware of the natural bounty that should surround them—a legacy that belongs to ALL the people, not just the sportsmen minority. And they are becoming increasingly aware of the exploitation that is robbing them of their rightful legacy.

O. E. Smelser
San Bernardino, California

While Mr. Gildea's scholarship-award-winning essay may seem to overemphasize the urgency for harvesting surplus wildlife to prove his point, it is nonetheless a sound biological principle. All animals above the basic number the land will support—usually the numbers of breeders from the previous spring—are scheduled to be destroyed by man or nature. Should a hunter be forced to watch many of these die just to bolster the false hopes of those who think animals can be stockpiled? Mr. Smelser's opinions reflect those of a California group known as the United Humane Front, which believes it is immoral to hunt. They say that present management of game is a means of wanton and wholesale slaughter, that the buck you shot last year belongs to all the people, that 92 percent of the people are opposed to hunting because only 8 percent do hunt, that the Hunter Safety Program for youngsters is an exploitation of commercial possibilities, that archery hunting is cruel and that hunting is a public mass slaughter. The California Wildlife Federation and its affiliates are actively opposing their attempts to curtail or abolish the harvesting of the surplus wildlife crop by the public which has been enjoyed as a healthful outdoor sport since the founding of our country and which should be maintained for future generations.—Ed.

"This is what I call roughing it. Only one channel!"

I WANT to thank Mrs. Teele and Mr. Jones for their letters in your June, 1962, issue for I certainly oppose hunting in the state and national parks as well as "predator control, hotels, motels, marinas, ski lifts and unnecessary roads," as Mrs. Teele so aptly puts it.

I enjoy your magazine but feel you are missing an opportunity in not broadening your scope. A magazine calling itself VIRGINIA WILDLIFE should not consist of 90 percent (or more) articles on hunting, fishing and boating. Let the sports and hunting magazines supply this need.

Mrs. David G. Holmes
Williamsburg, Virginia

TO the whole staff of the finest magazine that I have ever had the pleasure of reading: Your stories of fish and game are the most complete and understandable writings that I have read, not to mention all the other fine subjects you write about. It is indeed my pleasure to send my check for three more wonderful years of good, wholesome, and clean reading.

Arnold R. Goodson
Williamsburg, Virginia

"Yes, there's a guarantee on its accuracy—but not on yours."

ENCLOSED is my check for another year's subscription to your fine magazine.

Your stand opposing the Gathright Dam is especially commendable. To cover that beautiful stretch of the Jackson would be a shame. We need more trout water such as this, and the job the Commission is doing there, particularly the stocking of brown trout, is excellent.

I had the chance to fish the fish-for-fun area of the Rapidan River last weekend, and although we didn't have much luck due to the weather, the trip was most enjoyable. One of the wardens, Mr. Utz, was especially courteous and helpful in supplying directions and fishing tips. I hope the Commission will see fit to open more similar areas.

John R. Hicks, Jr.
Richmond, Virginia

THE cover illustrations alone make renewal worth while. I look forward to each issue. A grand little nature magazine!

Fred Witt
Gates Mills, Ohio

I HAVE the honor of requesting that your office include our library on your free mailing list to receive VIRGINIA WILDLIFE. Your publication will greatly help our faculty members and students in the up-to-date trends of fisheries and allied sciences.

Vicente F. Viray, Jr., Principal
Binmaley School of Fisheries
Binmaley, Pangasinan, The Philippines

I HAVE been reading the pros and cons on an early hunting season in the VIRGINIA WILDLIFE magazine. May I give you several reasons why I think Virginia should not have an early hunting season east of the Blue Ridge Mountains:

1. Small game, such as rabbit and squirrel, are infested with the wolf or screw worm during the summer and fall months. These worms do not leave the game until after cool weather or after a few frosts. Frost seldom comes to this area until about the 10th or 20th of November. Taking game before frosts would be a complete waste.

2. If the small game season is opened early, hunters will be tempted to take larger game such as deer and turkeys. This is often done and never reported to any warden or checking station.

3. The small game in the Tidewater area is not plentiful enough for any longer season. They are not overpopulated enough to cause any disease to spread through them. Small game is not destroyed by predators in the summer any more than in winter.

Let's keep the season as it is and enjoy more game and better hunting.

G. W. "Bill" Warren
Smithfield, Virginia

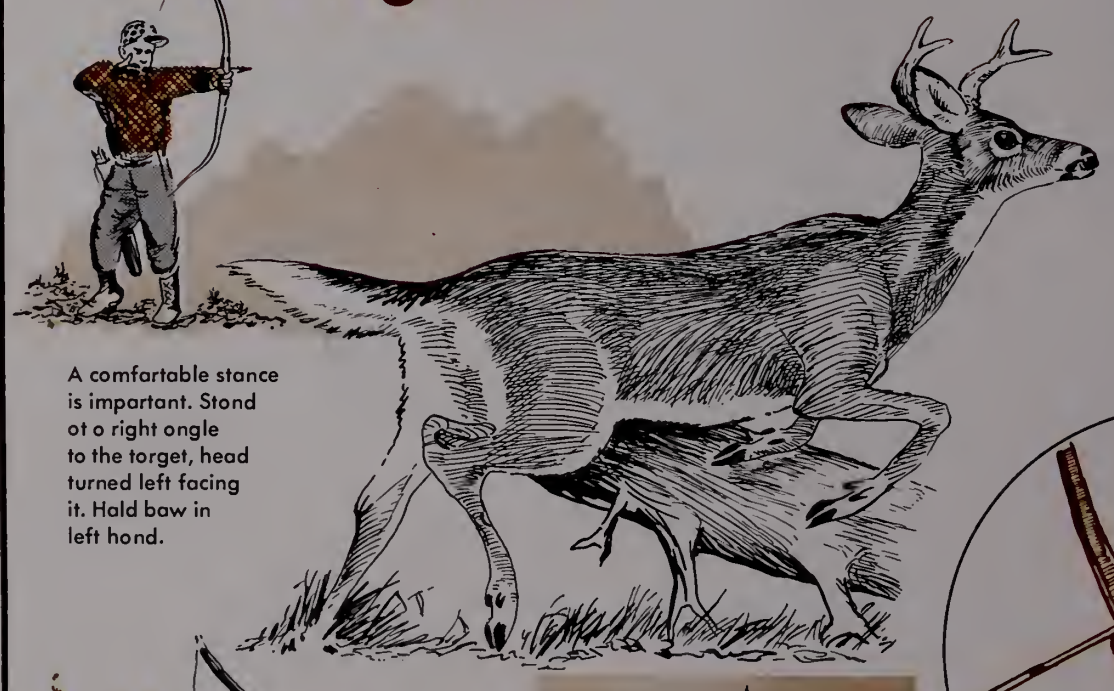
I WANT to write you how grateful we are to be on your mailing list to receive VIRGINIA WILDLIFE and "News! from the Virginia Commission of Game and Inland Fisheries." We go through each issue very carefully, looking for news of interest to Public Safety people for the monthly "Public Safety Newsletter." I hope you have noticed that your news is beginning to appear in our national newsletter for top-level program people.

Ralph Kuhli, Director
Public Safety Department
National Safety Council
Chicago, Illinois

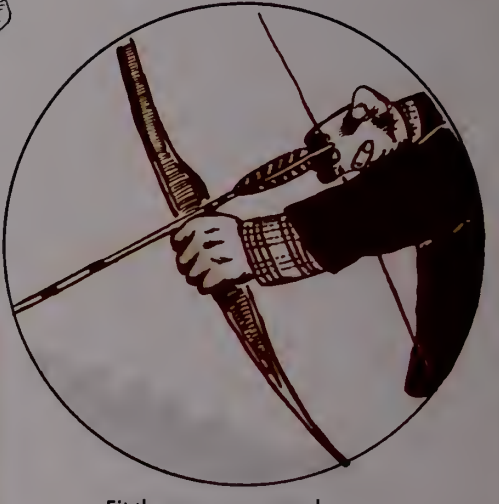
BOWHUNTING in Virginia

Archery Season

"Deer af either sex, beor ond squirrel moy be token with bow ond arrow anly (use of dogs prohibited) October 15-Navember 1 in oll counties with open deer seasons, the bog limit ta carrespand ta the number allowed in that caunty during the generol seoson."

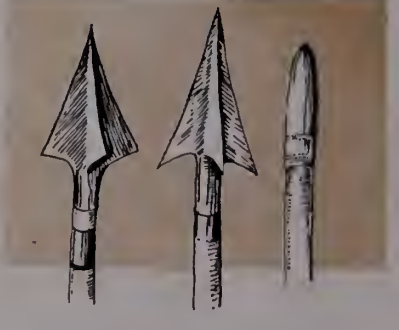


A comfartable stance is impartant. Stond ot o right ongle to the torget, head turned left facing it. Hald baw in left hond.

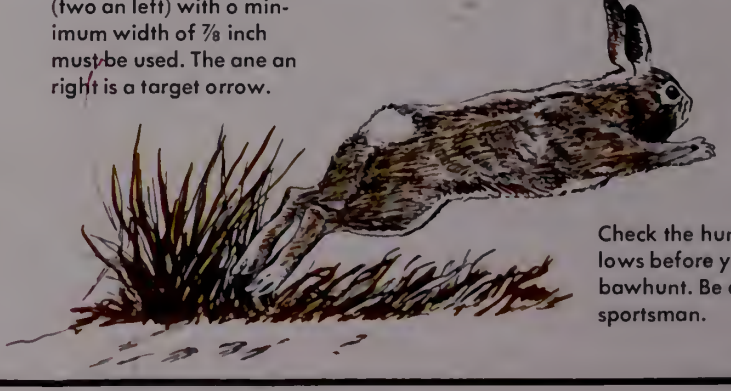


Fit the orraw an yaur baw string at the exoct some place each time far better ond mare cansistent accuracy.

Comouflage and steolth are essential to the baw hunter. Get clase enaugh far a clean kill every shot.



Broodheod hunting arraws (two an left) with o min-imum width of 7/8 inch must be used. The ane an right is a target orrow.



Check the hunting lows before you bawhunt. Be a gaad sportsman.